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Eye Conditions Prevalent in the School Age*

Joseph E. Golding, M.D.

THE factors causing defective vision in children of school age may be listed as heredity; prenatal disease; defects in the shape of the eyeball; focal infections; childhood diseases; and accidents, according to the author, who discusses these subjects in this article.

IN order that first things may be set down first it should not be forgotten that some of the eye conditions which we see during school years are due to congenital or hereditary factors and that during this period of life little, in many instances, can be done except to minimize the disability which results. In other instances we are helpless and must direct our attention to the education of the child to the end that he may make the best possible use of whatever visual power remains. This education includes helping him to plan his life work along lines wherein his visual capacity may be used to the greatest advantage both to himself and to the community. It also includes the conservation of whatever vision he has when he comes under observation.

The prevention of the known hereditary conditions rests upon stringent laws and regulations, and their strict enforcement, to prevent the marriage and the begetting of children by the unfit and by those who are known to have, or whose family history indicates that they have, transmissible diseases, or any of the so-called familial diseases. No treatment and no hygienic régime can do other than minimize the damage of interstitial keratitis (a chronic variety of inflammation of the cornea with deep deposits in the substance

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of the cornea which becomes hazy throughout and has a ground-glass appearance), for example, which is due to hereditary syphilis. The same might be said for retinitis pigmentosa (inflammation of the retina or structure which records the image seen, marked by progressive hardening of the retina with discoloration and shrinkage) and to a lesser degree of congenital cataracts (an opacity or imperviousness to light rays by the lens of the eye which originated before birth), which have a tendency to appear in succeeding generations, though for the last condition operation for the removal of the cataract offers the hope of better vision.

From all this it is evident that these very deplorable eye conditions cannot be prevented by us nor in many cases can they be successfully treated. The remedy for them lies in a better and more widespread recognition of the possibility of their occurrence and the application of a sound system of eugenics.

Necessity for Good Hygienic Surroundings

Given a good heredity, the child cannot develop normally without proper guidance as to feeding, housing and clothing and the cultivation of good health habits. If we think of the eye, not as a thing apart from the rest of the body—a mere optical instrument like the camera, with which it has many points in common—but rather as a part of a living being, we can not fail to be impressed with the fact that what is good for the body in general is good for the eyes, and what is bad for the body in general is bad for the eyes. With this in mind the need for proper feeding, clothing and housing will impress itself upon us as being quite as essential for the health and proper functioning of the eyes as it is for the general health.

Poorly nourished children, in bad hygienic surroundings, are particularly susceptible to certain forms of diseases of the eyes. For example, I have in mind that about three years ago we had at one of our hospitals more than 100 cases of follicular conjunctivitis (inflammation of the firm inner framework of connective tissue which gives shape to the eyelid) in children of school age all of whom came to us from an institution for children. More or less crowded, as is common in many institutions, they were living a sort of dull routine life as to food, exercise and general environment, which diminished their powers of resistance, and as a result they

fell easy victims to the disease which, happily, was curable and left them with no visual crippling. Under happier environment, with wider variety of food, more attention to ordinary rules and less crowding of the children, this epidemic would not have occurred.

Focal Infections

Disease of one part of the body as the result of an infection in another part is coming to be recognized as common. Affections of the eyes are no exception to this rule and these so-called focal infections are the cause of a variety of diseases of the eye. For example, diseased tonsils, abscessed teeth and infections of the nasal sinuses may not only be the cause of such general conditions as chorea (a convulsive nervous disease—St. Vitus' dance), rheumatism, endocarditis (inflammation of a lining of the heart), etc., but iritis (inflammation of the iris or band of radiating fibers by which the pupil is dilated or contracted), keratitis, scleritis (inflammation of the tough white supporting tunic of the eyeball, covering it entirely except for the segment covered by the cornea), and other eye conditions are often directly traceable to them. It is imperative that the social worker and all interested in the conservation of vision keep these conditions in mind in order that they may be helpful in advising parents regarding them and their potentialities for harm.

Diseases of the Eye

Diseases of the eye occurring in the school age group may be divided into two classes: those showing external signs of inflammation and those exhibiting no such signs. In the latter group the only evidence that disease exists, in many cases, is the impairment of vision.

Diseases accompanied by external evidences of inflammation, to mention only a few of the commoner ones, include diseases of the lids, such as styes and blepharitis (inflammation of the eyelids), and conjunctivitis in its various forms, keratitis, scleritis, and iritis. These are all accompanied by more or less redness, photophobia (abnormal intolerance of light), increased lacrimation (the secretion and discharge of tears), and pain of greater or lesser intensity. Cases of conjunctivitis and keratitis have some discharge from the

eye. Inasmuch as some of these diseases are benign while others are capable of causing great impairment of vision, and the differentiation between them is not always easy, it is imperative that these children be promptly referred to a physician in order that the correct diagnosis may be made and proper treatment instituted as early as possible. A slightly red eye, which to the layman is "just a cold in the eye," may be an iritis which, if not promptly placed under proper treatment, may result in great visual loss. Suggestions that boric acid solution or argyrol or any other remedy be used in such an eye before an accurate diagnosis has been made have had serious results. It is a safe rule to follow to insist that every red eye be seen by a physician as soon as possible to the end that early treatment may be instituted and permanent disability reduced to a minimum.

Conditions not accompanied by evident signs of inflammation include cataract, chorioretinitis, retinitis pigmentosa, retinal hemorrhages, hemorrhages into the vitreous (the semi-fluid, transparent substance which lies between the retina and lens of the eye), and diseases of the optic nerve. Also included in this class are those eye conditions which are secondary to general diseases, such as Bright's disease (inflammation of the kidney), diabetes (a disease marked by habitual discharge of an excessive quantity of urine), and brain tumor. In all these conditions a thorough and complete physical examination of the child to discover the underlying cause should be made and proper treatment prescribed if permanent visual disability is to be avoided. The interest of any child will be best served if the teacher, school nurse or social worker will, on discovering any abnormal eye condition, refer the child to his own family physician. Not only is he familiar with the child's previous medical and eye history, but he is more likely than anyone else to know of the family tendency toward disease, constitutional and otherwise, which might have a bearing on the eye condition. He is, because of this fact, in a position to supply the eye consultant more promptly with facts of importance relative to the child's physical condition.

Mention has been made here of only a few of the eye conditions which affect the eyes of children of school age. Time does not permit mention of all the conditions which may occur at this period

of life, so it might be well to proceed to those conditions which we meet most frequently and which present some of our greatest problems. I refer to refractive errors so commonly met with in school children either associated, or not, with muscular anomalies. Quite aside from the question of strabismus (squint, or crossed eyes) there are many children with defective vision in whom the defect is never noticed until the child's vision is recorded by the teacher or school nurse. These children have deceived themselves and their parents by squeezing their lids together in order that they might get clearer vision and thus the condition has passed unnoticed. Incidentally, a visual acuity of 20/20 in each eye does not mean very much except that the child has vision which comes up to a somewhat arbitrary standard, for these children may, in many instances, be suffering from definite eye symptoms despite their 20/20. Many of them, indeed, are greatly in need of glasses to give them comfortable vision; and this is, of course, essential if they are to do good school work and if they are not to put too great a strain upon their eyes during this period of their development.

Refractive Errors

If we now pass to the refractive errors, those conditions which will be benefited by the wearing of glasses, we find that they are divided roughly into three main groups: (1) hyperopia or farsightedness; (2) myopia or nearsightedness and (3) astigmatism.

Just to simplify we may say that hyperopia, or farsightedness, is that condition in which the child may or may not see distant objects well but he has difficulty in maintaining a distinct image of small objects for a long time. Here the image of the object is focused at a point behind the retina, and only by a great effort of accommodation can a clear image be had. As a result of this accommodative effort headaches and other symptoms of eye-strain develop. In myopia, on the other hand, vision for distant objects is greatly impaired but objects held close to the eyes are distinctly seen. Here the image focuses in front of the retina and efforts at accommodation would only make matters worse; hence no such effort is made and myopes, for this reason, suffer much less than do hyperopes from headaches. Astigmatism, or astigmia, is that condition in which the cornea or lens, or both, have different refractive

power in different meridians. One meridian may be emmetropic and another, hyperopic or myopic; or any combination of these may exist. Depending upon whether the astigmatism is myopic or hyperopic, the image will be focused either in front of or behind the retina.

Hyperopia.—This is the condition existing in all human eyes at birth. It may be said to be congenital and in its higher grades it is often hereditary. The tendency is for hyperopia to diminish gradually as the child grows older. Hyperopia is always accompanied by excessive accommodation in order that the image may be focused on the retina. Farsighted eyes are shorter from front to back than normal eyes. This excessive accommodation causes eye fatigue, headaches, and finally blurred vision when the accommodation relaxes entirely from overwork.

The association of accommodation with convergence readily explains why so many of these hyperopic children are cross-eyed. Despite the fact that the mother of the child insists that the eyes crossed following a fall or an acute illness, we believe that there is little or no causal relationship. Every child falls at some time or other, but not all of them, not even the hyperopes, develop a squint. Excessive accommodation, accompanied as it is by excessive convergence, is the prime factor in the production of this condition. In the beginning the squint may be noticeable only when the child is tired late in the day. Cases such as have been described are in most instances relieved of their strabismus if, by the wearing of proper glasses, the accommodation is sufficiently relaxed. It is essential that in the examination of these children the muscles of accommodation be fully relaxed before the refraction is done. This is accomplished by the use of atropine, or other similar drug, which has the property of dilating the pupil and paralyzing, temporarily, the accommodation muscles. Even after the correction of the vision by glasses it will be found in many cases that the vision is subnormal in one or the other eye. This defect will be found in the eye which was in faulty position before the glasses were prescribed. The eye which is in a position of excessive convergence is for the time being temporarily out of use and, therefore, according to one school of thought, its vision fails because of disuse, much as an arm which has been put into a splint is helpless for a long time after the

removal of the splint. Another school of thought insists that the vision in one eye was primarily poorer than that of the other and that the squint develops as a result of this condition. They support their contention by pointing out that eyes with corneal maculae which seriously impair the vision are prone to wander from the primary position. Whichever of these schools is correct, the fact remains that in cases of concomitant squint the vision is poorer in the squinting eye than it is in its fellow excepting only in cases of alternating squint in which either eye fixes alternately. Nurses, social workers and others interested in this problem will save oculists headaches and parents much money if they will remember that in many of these cases the vision in one eye cannot be brought up to normal.

When the eyes can be brought to a parallel position by the use of glasses, operation for the correction of the squint is not necessary. Occasionally when glasses do not have the desired effect, resort may be had to operation upon one or more of the ocular muscles. Parents and children should be impressed that operation for the cure of squint is purely a cosmetic measure and is without effect in improving the vision.

Myopia.—If the natural tendency for hyperopia to diminish in degree is carried too far, myopia, or nearsightedness, will develop. In the normal development of the eye, as has been stated, hyperopia tends to be reduced as time goes on and by a diminution of the hyperopic reserve, the condition goes over into myopia. As the eyeball elongates in its anteroposterior diameter, the refraction becomes less hyperopic, but in most persons a normal hyperopic reserve is maintained. It is only when the elongation of the eyeball goes too far that myopia develops. Other causes of myopia are corneal opacities, keratoconus, astigmatism, and heredity. There appears to be a racial tendency to myopia, especially in the Jewish people, in whom it is said that myopia is 40 per cent more frequent than it is in others. Statistics show that twice as many boys as girls are afflicted with myopia, but that the highest degree occurs in girls—also that most of the myopia seen in school children existed before they entered school. Be that as it may, it is certain that it progresses mostly during school years. It is, therefore, very important that nearsighted children be examined frequently, re-

cording results on a chart or graph showing whether their myopia is progressing rapidly or not, so that a proper regimen for their eyes may be prescribed. It is generally conceded that visual capacity rather than visual acuity should be our guiding star in the care of these children. Myopia is not the direct antithesis of hyperopia because it may be accompanied in its later stages by distinct organic changes in the structure of the eye. As the eye elongates the retina and choroid are stretched and in some cases actual tears appear in the retina which are later followed by retinal detachment, a most serious accident. Muscular anomalies occur in myopic eyes, just as they do in the hyperopic, only here, since the accommodation is largely in abeyance, the tendency to converge is reduced to a minimum; where either eye assumes an abnormal position, it is usually in a position of divergence.

Treatment of this myopia should first of all be directed at the correction of the refraction by glasses. There should be a minimum amount of near work required. Outdoor exercise, by stimulating the activity of the suprarenal glands, is credited with retarding the progress of myopia. A correct position of the body and head during study, through the use of proper desks and seats of proper height, is considered important by some authorities. The use of books with type of a size easily read is desirable, and well-diffused illumination, coming from a source behind the child, is advisable. Perhaps as important as any of these is a proper restriction of the hours of study. Operation for the cure of myopia by removal of the crystalline lens from the eye has been advocated but is done rarely—only for the very high degrees. All cases of myopia should be examined three times a year and glasses changed as often as seems indicated.

As a conclusion to this discussion of myopia may I quote from the writings of Dr. Avery Prangen, of the eye department of the Mayo Clinic, as follows:

1. Myopia is an abnormal tendency to reduce the hyperopic reserve normally seen in children.

2. This abnormality is seen in both hyperopes and myopes, but it is troublesome only to the myopes.

3. This process may become arrested at any time, or continue unchecked.

4. Myopia is the result, not the cause, of this difficulty.

5. An hereditary tendency, together with age, is the chief factor. The importance of all other factors is debatable.

6. Constant wearing of fully correcting lenses is important.

7. Periodic examinations to keep the correction apace with any change in the myopia are a necessity.

8. General hygienic and dietary measures are indicated.

9. Restriction of unnecessary near work seems sensible.

10. Progressive myopia of the malignant type is rare. Its management and care are individual problems.

Astigmatism.—The third important refractive error which should be considered is astigmatism. Here the refractive power of the eye is different in different meridians, and glasses to correct one or more of the meridians at fault are prescribed for its correction. In this condition some of the rays of light entering the eye may fall on the retina or in front of or behind that structure, and, since they do not come to a focus on any one point, indistinct vision results and symptoms of eyestrain develop. Astigmatism may be regular or irregular. The former type may be corrected with cylindrical glasses but the latter is very difficult of correction except with contact lenses. This type of refractive error may also be classified as hyperopic, myopic and mixed. Excepting only contact glasses, all lenses for the correction of astigmatism must be adjusted at the proper axis if clear and comfortable vision is to be obtained. Any bending of the frame or turning of the lens in its rim will throw the lens off its axis, and discomfort will result. For this reason it is important that such glasses be taken frequently to the optician for adjustment.

Eye Injuries

The most common causes of injuries to the eyes are foreign bodies in the cornea, the common B B shot injuries from an air-rifle or bean-shooter, injuries from fireworks, and those from chemical caustics. Here, if ever, is it true that "an ounce of prevention is worth a pound of cure." Many eyes are lost annually because of fireworks and B B injuries alone. Perhaps a few examples will make this statement more impressive. About five years ago a fine boy of about 14 years of age was curious to know what would happen if he placed a lighted firecracker under an ordinary tin can,

so he tried it. The can did not go straight up in the air as he had expected, but instead it struck one of his eyes damaging it beyond repair. We tried for several days to save the injured eye, but this proved unsuccessful and the eye was enucleated. Despite this operation he developed sympathetic ophthalmia in the other eye three weeks after he left the hospital. He was again hospitalized and the second eye treated. The result was that this eye was saved, but with vision which amounts to only about 20/200. Another instance of a different nature, but none the less tragic, concerns a girl of about 10 years of age who, while sitting on the porch of her home, was struck in one eye by a B B shot from an air-rifle in the hands of a neighbor's boy. The iris was torn away from its attachment to the ciliary body, and within a few days there was present a traumatic cataract. After operation for the cataract she had a corrected vision of 20/40, but now, 12 years after the injury, the pupil is filled in by a dense membrane and she has no useful vision in that eye. In addition, the injured eye is in a position of noticeable divergence, and this constitutes a very marked cosmetic defect in a rather attractive young woman now 22 years of age. These two examples of preventable eye accidents emphasize the need for laws and regulations outlawing dangerous playthings.

Injuries resulting from chemical caustics entering the eyes are seen not uncommonly in the chemical laboratories of our high schools and colleges, as a result of poorly planned and poorly executed chemical experiments. The results in some cases are extremely disastrous. Free flushing of the eye with quantities of water and the application of a cold, wet, clean compress should be immediately followed by sending the child to a physician.

As the injuries here enumerated seem bound to happen, it is incumbent upon those who see them first to meddle with them as little as possible. No attempt should be made to remove foreign bodies with a knife, toothpick or other handy object. Such eyes should be kept clean, a sterile or at least a clean dressing applied, and the child sent to a physician. If the eyeball itself has been injured, cleanliness again is the watchword. Do not handle such eyes more than is necessary to apply a clean dressing and bandage to keep it in place, being careful not to have the bandage exert any pressure upon the eye lest some of the contents of the globe be lost.

Motor Vision in Safe Driving*

Alvhh R. Lauer, Ph.D.

THE author lists the following eye defects as contributing to motor accidents: reduced acuity, muscle imbalance, reduced field of vision, ocular dominance, blinding from glare of headlights, poor distance judgment, scotomata, and general inattention in driving as brought on by eyestrain.

The Problem

FEW people realize the seriousness of our accident problem. It is the greatest single menace to the public health and welfare today. This fact is magnified when we consider that the victims are usually in the pink of physical condition. It is a scourge which strikes the strong instead of the weak. More than 37,000 fatalities last year! Nearly a million injured, with no provision made for pensions, adjusted compensation, or benefits otherwise. Our hospitals are crowded with the victims, many of whom will die prematurely from injuries sustained or will go through life maimed. No other one cause of human suffering is receiving so little scientific attention as the problem of safety. A few of us who have attempted to carry on scientific research have found it very difficult to secure the funds to conduct the needed studies in order to obtain results necessary for valid conclusions. Every year we have had to expend personal funds to accomplish even temporary objectives, and at present many studies completed have not been published because of lack of money to make such publications available. The studies which have been carried out to date have been made possible largely by the generosity of the American Optometric Association. Various colleges and research agencies have aided, but the work was pioneered by that Association. It is for this

* Radio address delivered over Station WTIC January 18, 1937.

reason that I am very happy to give you a general bird's-eye view of the studies which were begun at the Ohio State University nearly ten years ago. The results will be emphasized only in a general way. Later I shall give you more of the detailed results.

Why Do People Have Accidents?

One of the things we have learned during the past ten years is that accidents do not "just happen." It is unfortunate that the term accident came to be used in this connection. A term like wreck, collision, or crash would be much more appropriate. We do not speak of train accidents—we speak of train wrecks. It is generally conceded that a reason for the wreck may be assigned. Either the engineer missed a signal, a dispatcher made a mistake, a yardman left a switch open, or there was some definite mechanical defect in the equipment. It was not merely a turn of fate which was entirely unavoidable. Even mechanical failures may be traced to poor train inspection.

Types of Accidents

A study of automobile crashes reveals a number of types of accidents. This is one point which the amateur safety enthusiast overlooks. To describe a few types of accidents—we are forced to use the term from precedence—will suffice to illustrate:

1. Those which happen at intersections:
    a. One car turns across the path of another going in the same or opposite directions.
    b. One car runs across the path of another moving at right angles to it.
2. Those which happen on the straight-of-way between intersections:
    a. One car pulls across the path of another going in the same or opposite directions.
    b. One car is struck directly from the front or rear by another.
    c. One car fails to keep on the road due to mechanical failure, insecure traction, or failure of the driver to maneuver properly.

3. Those which occur from vehicles moving down a hill from a standing position through sheer force of gravity.
4. Those in which pedestrians are struck.

It is quite certain that no one wants to have a crash in which he will lose money, time, his social standing, and perhaps even his life. Estimates by the National Safety Council place the blame for from 85 to 90 per cent of accidents on the driver. Yet we know that a man in his right senses will not deliberately expose himself to unnecessary danger. If a maniac were running at large who would shoot anyone on sight, the streets would soon be evacuated except by those whose duty demanded apprehension of the individual. Few people would submit themselves to a scientific experiment which might possibly bring death. Yet men and women drive like mad on dangerous highways and flirt with death at every unguarded intersection. Many drivers are like ostriches. They feel that as long as they see no danger—in the form of cars or road conditions—such dangers do not exist. It is an established fact that more automobiles are driven deliberately into trains at crossings than there are trains which strike automobiles on the track.

The point I wish to make is that there are relatively few general types of accidents and that drivers do not wish for crashes. Collisions with cars or objects take place only because the driver fails to do one of three things:

1. Sense dangerous situations, namely, become aware of their presence so far as the physical data are concerned.
2. Interpret properly the situations which he does sense.
3. Control his vehicle in such a way as to avoid dangerous situations which arise because of, or in spite of, failures 1 and 2.

It is fair to say that 85 to 90 per cent of accidents come under one of the three classes of weaknesses of drivers. Under the first heading are those due to sensory inadequacy. Man has ten senses: smell, taste, pain, warmth, cold, touch, muscle, equilibrium, hearing, and vision. There may be a few, but very few, accidents traceable to the first five mentioned. Touch, the muscle sense, and equilibrium play a part in manipulation, particularly on improperly banked curves. More cars run off the road at curves than slide off or deliberately upset. Either the driver does not have the strength

or action to pull his car around the curve—when traveling too fast—or he misjudges and is led to believe that he is turning over and keeps in a more or less straight line. Poor hearing may be responsible for some accidents, but deaf drivers have been found to be relatively free from accidents, equating for their scarcity.

This leaves vision as the one important sense department in driving. There is some controversy over the amount of vision necessary for safe driving, but there is general agreement that a blind person cannot drive. Since we are here primarily interested in visual aspects of drivers, we shall dispense with most of the other weaknesses of drivers, for the time allotted to the present discussion will not permit a complete account of the various conditions of poor interpretation of stimuli and failure to respond quickly enough to avoid trouble. We shall confine our efforts to a further discussion of visual defects associated with accidents. These may be listed as:

1. Reduced acuity, or keenness of vision, and farsightedness.
    a. Nearsightedness.
    b. Astigmatism.
2. Muscle imbalance or failure of the eyes to align properly.
3. Reduced field of vision for movement.
4. Ocular dominance—the tendency to use one eye more than the other.
5. Blinding from glare of headlights.
6. Poor distance judgment or depth perception.
7. Scotomata or "holes in vision."
8. General inattention and drowsiness brought on by eyestrain.

As suggested before, in addition to vision, there are many other weaknesses of drivers associated with accidents, but certainly everyone should be aware of his visual conditions and how they may lead to trouble. Here are a few of the ways. If you will remember the above classification of contacts between vehicles, it is obvious that many such collisions occur because of the following:

1. Failure of the driver to see or interpret a warning sign or signal in time to stop in order to avoid it.
2. Failure of the driver to determine the exact location of a vehicle, person, or other object in time to avoid collision.
3. Failure of the driver to see objects or persons at night.

So far as vision is concerned, the first classification of failures of the driver may be due to lowered acuity or keenness of vision; restricted field of vision, namely, narrowed down from the sides; scotomata, or "holes in vision," in which part of the field objects will not be discerned; ocular dominance, or the tendency to use one eye more than the other; and lowered attention, which may result in temporary psychic blindness of one or both eyes.

The second classification of weaknesses—that of localizing the object—may be due to poor distance judgment or muscle imbalance, causing diplopia or double images. Cases of double images with as slight as 3 degrees of exophoria—eyes tending to turn out—have been noted. The driver would see two pairs of headlights in the distance and think one car was attempting to pass another. In reality there was but one car.

The third classification is that of blinding lights. Persons differ enormously in this respect. Older persons are usually more disturbed and more easily blinded by glaring lights than younger persons. Likewise lowered acuity is associated with inability to tolerate strong lights. Persons least disturbed by glare can stand forty times as much contrast as those most affected. We are hoping that the perfection of polarizing glass may solve the glare problem soon.

Space will not permit the description of other deficiencies drivers have in the way of physical weaknesses. Sluggish action, slow reaction time, inability to evaluate situations quickly, nervousness, poor motor co-ordination, and poor attitudes represent a few of these. The so-called careless or reckless driver does many things which can easily be explained if his behavior is properly analyzed. Our experimental studies have gone a long way, but much more remains to be done. All factors must be studied in relation to each other before a satisfactory final solution can be reached. The quest for new relationships must be continued in order that we may get at the root of the accident problem. The applications of such studies will gradually be used as the results are more firmly established. It is for this reason also that the quest must be continued. States with rather rigid standards like Connecticut have done a great deal to reduce accidents. Recent reports place Connecticut high in the list—first during 1936. Some other states have no

standards at all. Their accident experience is very bad and increases have gradually mounted.

In summary let me merely say that one of the best ways to decrease accidents is to apprise the driver of his actual potentiality as a driver. This has been demonstrated in commercial companies. Most drivers think they are good. Actually some are 15-mile-an-hour drivers. Others are 25-mile-an-hour drivers. Still others may drive safely at 35, 45, or 55 miles an hour, under favorable conditions. A very few might drive safely at 65 miles an hour. Our experience with racing drivers shows that they drive only 45 to 50 miles an hour when on the highway, yet some 25-mile-an-hour drivers have boasted to me that they do 90 miles an hour. One might answer that not every one of the German artillery hits was fatal, yet it was not healthy or conducive to good health to be caught in a barrage. In closing it may be said that a driver should go no faster than his visibility allows. If his eyes are defective, they should be made as good as possible. There will be plenty of danger from other causes at best.

Suggested Regulations for Lighting Sight-Saving Classrooms*

THIS article was prepared by a committee called by the Ohio State Department of Education to ascertain the quality and quantity of light recommended for comfortable, efficient, and economical classroom use by pupils in sight-saving classes. The committee consisted of sight-saving class supervisors, oculists, lighting experts, and school directors.

Introduction

The sight-saving class presents an appealing opportunity for increasing visual efficiency and ease in seeing through (1) the correction of ocular deficiencies, (2) the regulation of visual tasks in accordance with the visual abilities of the pupils, and (3) the provision of adequate light and proper lighting. These are the controllable factors in seeing, and, in this report, certain specifications for the lighting of sight-saving classrooms are presented.

Modern educational methods impose upon the eyes of school children visual tasks which are not only critical, severe and prolonged, but also unnatural. Such tasks are often detrimental to normal adult eyes and are particularly serious to young eyes in a formative period. Obviously, the seriously defective eyes of children in sight-saving classes need all of the assistance which science is capable of giving. Furthermore, it is important to emphasize the fact that the visual tasks of the schoolroom, for these children, will be severe even though ideal conditions are provided.

Size of Sight-Saving Classroom

Though the number of pupils in a sight-saving classroom is usually lower than in a regular classroom, the room should be as large

* Adopted by the Ohio State Department of Education. This article is reprinted, with permission, from the *Transactions* of the Illuminating Engineering Society, September, 1937.

as an ordinary classroom. This is desirable so that the pupils can move around a great deal in order to be able to see to the best advantage.

Orientation of Building

Because of wide differences in climatic conditions it is impossible to lay down definite rules for the orientation of school buildings that will prove satisfactory in all parts of the state. In addition to those important conditions that are necessary for the greatest ease in seeing, there is need to consider conditions affecting ventilation and the psychological reaction of illumination on the child.

A northern exposure may afford a comfortable, steady light under which to work, but in many places such an orientation of classrooms renders them cheerless in the extreme. In some latitudes southern exposures may be preferred because of the greater amount of sunlight they make possible, yet the natural illumination from a southern exposure may be so difficult to control that the advantages such an orientation offers may be quite overbalanced by the disadvantages. Researches tend to show that east and west exposures are preferable in some areas since they give a maximum of light with a minimum of glare.

Quality of Lighting

The quantity of light is by no means the only factor to be considered. The quality of lighting, whether natural or artificial, is of great importance. Distribution of light, diffusion, direction, glare and color of walls and ceiling, and maintenance all have significant effects on seeing conditions.

Glare

The presence of glare is one of the most common and serious faults of lighting. Glare may be designated as any brightness within the field of vision of such character as to cause discomfort, annoyance, interference with vision, or eye fatigue. There are two common types of glare—direct and reflected. Both should be carefully avoided.

Direct glare is caused by light that reaches the eye directly from the source of light. It may be experienced when looking at a bril-

liant, unshielded, incandescent lamp or a comparatively small, bright lighting fixture, especially when viewed against a dark background. Also direct glare is experienced when looking toward windows through which the sun or bright sky is visible or where brilliant sunlight may be seen reflected from buildings or other outside surfaces. Children should not be required to face the windows when they are working or receiving instruction.

Reflected glare occurs when bright images of windows or artificial light sources are reflected into the eyes from walls, ceilings, etc. It often occurs when light is reflected from the surface of glazed paper, glossy desk tops, or shiny blackboards and results in the concealment of the object viewed.

Diffusion

Diffusion is important in order to avoid sharp shadows on the work and sharp contrasts of light and shade in the room. The larger the light source area, the softer and less pronounced will be the shadows. Light should be well distributed over the entire room so as to produce reasonable uniformity of illumination at the work places of all pupils.

Ceiling and Wall Colors and Finish

Marked consideration should be given to the colors of the ceiling and side walls in the classroom. On the large wall areas, buffs with a very little yellow are often used, particularly where the idea of warmth and cheer is to be accentuated. There is some tendency to use the "cool" colors in tints and combinations, predominantly blue or green, since these appear to have a quieting effect and tend to make a room look larger.

The walls should reflect from 50 to 60 per cent of the light falling upon them. The wall area below the window sills should be of a moderately dark color.

The ceiling color should be very light with a reflection factor of 80 per cent. White or bluish white, very light ivory or cream are suitable colors.

The use of moderately light colors is suggested for all woodwork. Fairly light-colored, dull-finished working surfaces on desks and tables are recommended.

Avoidance of Shiny or Glossy Finishes

Flat or matte finish paints and dull surfaced materials should be used on all wall and ceiling areas, including the window and door frames and trim. Shiny or glossy surfaces reflect bright glaring spots of light from the windows or lighting fixtures. Matte finishes diffuse these spots of light and reduce brightness contrasts.

This precaution is important in all schoolrooms because young eyes are particularly sensitive to reflected glare.

There seems to be a mistaken idea that shiny surfaces reflect more light than do dull or matte surfaces. Reflection factor depends primarily on color, also, dark-colored surfaces do not necessarily diminish reflected glare. A dark, shiny surface is often more annoying than is a light colored one from this standpoint.

Control of Natural Illumination

The most satisfactory control of natural lighting, at the present time, appears to be obtained by having at each window two translucent, buff-colored shades in soft finish. It has been found that these are effective in diffusing direct sunlight and in preventing glare. Shades in soft finish will not crack and are easily cleaned. The rollers of these shades are placed at or near the center of the window, one directly below the other, the space between them covered by a V-shaped metal bar. Such shades should be wide enough to prevent streaks of light from entering at the sides. To accomplish this it is usually necessary, unless the windows are deeply recessed, to fasten the rollers on the bastions.

As specified in the Ohio State Building Code, the glass area of the windows should be not less than 20 per cent of the floor area. Since the best light comes from the top of the windows, in order to insure as much natural light as possible on the far side of the room, no sight-saving classroom should be wider than twice the distance from the floor to a point 6 inches above the top of the glass in the window.

Unilateral lighting is desirable as this reduces cross lights and shadows to a minimum.

Minimum Level of Illumination

Since the eyes of pupils in sight-saving classrooms are unable to carry their full share of the load of seeing, compensation should be

provided in the form of extra illumination. The results of carefully conducted studies and of the best current practice based thereon indicate that the minimum, sustained, operating level of illumination should not be less than 30 foot-candles, with higher values often desirable.

Artificial Lighting

To maintain good seeing conditions, artificial lighting must be supplied when daylight fails, as on dark and cloudy days. In some localities such deficient daylight conditions prevail for more than half of the school hours during the year. Further, it is not always realized that even on bright days, except for desks very near the windows, levels of illumination from natural lighting of the order of 30 foot-candles, are seldom found in the average classroom; hence natural lighting must be supplemented by artificial lighting. On dark and cloudy days dependence must be chiefly on artificial lighting.

Type of Lighting

To secure the indicated level of illumination with a minimum of direct and reflected glare, with the light well distributed and diffused and with harsh shadows eliminated, totally indirect lighting should be used. If a slightly luminous bowl effect is desired for psychological reasons, at least 95 per cent of the light should be directed to the ceiling.

Control

Wiring and switches should be so arranged that the row of lighting fixtures on the window side and the row on the inner side of the room can be controlled independently.

It is well known that the human eye is not able to judge accurately varying levels of illumination; hence lamps are often not turned on when really needed. The photocell control is being used to turn on or off automatically one or both rows of lighting units when daylight goes below or above the required levels of illumination, thus assuring good light for all students at all times and relieving the teacher of the responsibility.

Blackboards

1. The large wall area occupied by blackboards is somewhat of a handicap to good lighting and seeing conditions. The black areas absorb some of the light which would otherwise be reflected to the desks. Shades the color of the window shades are sometimes drawn to cover the blackboards when not in use.

2. For most sight-saving classes blackboards on one side and at the front of the room would provide ample accommodations for the pupils.

3. Special blackboard lighting units are desirable to provide adequate illumination on the blackboards.

Suggested Regulations and Recommendations

Rule 1. Minimum Illumination Values.—Illumination over the work area shall be maintained during all periods of use at a minimum, sustained, operating level of not less than 30 foot-candles. The illumination shall be measured on the working plane, such as the desk or table tops.

Rule 2. Natural Lighting.—Unilateral lighting is recommended. The minimum glass area should not be less than 20 per cent of the floor area. The bottom of the glass shall be at least 3 feet above the floor and the height from the floor to top of glass, plus 6 inches, shall be not less than one-half of the width of the room.

Windows shall extend toward the rear of the room at least as far as the front of the last row of desks and well toward the front of the room. No window should be nearer than seven feet to the front blackboard.

Rule 3. Artificial Lighting.—Except for desks very near the windows, levels of illumination of the order of 30 foot-candles are seldom found in the average classrooms, hence natural lighting must be supplemented by artificial lighting. On dark and cloudy days dependence must be chiefly on artificial lighting.

Totally indirect lighting, with or without a slightly luminous bowl effect, is required. If luminous bowl indirect lighting units are used, not less than 95 per cent of the light output shall be directed to the ceiling.

Ceilings shall be painted a very light color with a flat or matte finish and have a reflection factor of 80 per cent.

Side walls shall have a flat or matte finish with a reflection factor of 50 to 60 per cent.

Rule 4. Diffusion and Distribution of Light: Avoidance of Glare.—Lighting, whether natural or artificial, shall be such as to avoid glare, objectionable shadows, and extreme contrasts, and to provide a good distribution of light. In artificial lighting systems, lamps shall be so installed in regard to height, location, spacing, and glassware, reflectors, or other suitable accessories, as to accomplish these objects.

Recommendations.—The following recommendations are presented:

1. It is recommended that special blackboard lighting units be installed over all blackboards.

2. Since the eye is a very poor measuring instrument and since it is essential to be sure that pupils always have adequate illumination and to provide for the most effective control of a lighting system, it is recommended that photocell control be used to turn lamps on and off automatically when daylight goes below or above predetermined levels of illumination.

The Social Service Aspects of Refraction*

Jeanne Wertheimer

THE method of procedure in getting glasses for patients who need them, and for getting patients who need glasses to wear them, is essentially the same as in other medical social services.

IN these latter years, with more unemployment and more families on relief of various kinds, the problem of procuring glasses, because of the cost of medical care, has grown greater. There is the expense connected with the refraction itself and afterward the cost of the glasses, which may be more necessary for play than for work. Then with fewer private clinics accepting relief clients, patients have to wait for months before they are able to obtain an appointment. This combination of personal and community incapacity causes great difficulties. And these difficulties interpenetrate further than merely poor eyesight or conservation of vision, in any of its forms. The emotional strain which may be a result of poor vision or headaches, and the hours of the day when one can do nothing if one is presbyopic and without glasses, must surely have a damaging effect on the tempers of a family.

There are many clinics, of course, where the optician or a registrar attends to the glasses. Since the subject of this paper is the social service aspect of refraction, it necessarily implies that there is a social technique here. If it is the function of a social worker, it is a case-work process, which means that each case is seen as an individual. This is the first step in any treatment—and glasses are a treatment.

The majority of patients will present defects of vision which are not a serious handicap. These patients need glasses only to continue their usual way of life. But even with these patients it is

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necessary to learn the art of "selling" the glasses. This is particularly true, for example, of the adolescent girl who is more interested in her looks than in her comfort or in medical recommendations. It may be necessary to "sell" these glasses to her in some piecemeal fashion or to do some special thing about frames. The main object is to get her to wear them when she needs them.

The Medical Social Worker's Objective

I believe the objective of the medical social worker should be prevention of blindness and the prevention of an individual's distress. For, after all, one can do as much for alleviating his distress as for his blindness. Glasses may correct the refractive error, but it is questionable in certain types of cases whether they lessen the progress of the disease, as, for example, in malignant myopia, or in amblyopia ex anopsia. Therefore, both objectives must be kept in the foreground. Now in all our organizations we have varied rules: we may use only a certain type of frame; we may give only certain kinds of lenses; or we may give a certain number of glasses per month, etc. If we are case workers in any sense of the term we will find the way of getting proper glasses which the patient will wear, and getting them for him as soon as he should have them. If a child will not wear the regular frames, there is no sense in spending the money for them. No glasses should be ordered without the patient's knowing exactly what is being ordered. Distress can be obviated at times by providing frames that the patient would like to wear, even if they are second-hand from the doctors, boards, or friends. And this can save the social service department a little money, in addition to pleasing the patient.

In New York City all opticians give schools a flat rate on lenses and frames. When we give a school child second-hand frames, of course we explain to the school the difference in the frames. Our explanatory letters to the schools include the corrected vision and any recommendations. In turn, we have had some interesting answers which show that children are really wearing the glasses and sometimes are actually proud of them. One boy who had never shown any interest in his Latin took a great interest in it after putting on his glasses, even to the extent of being in the honorary Latin play.

The Economic Responsibilities of Each Case

One important thing to remember about glasses is that when one accepts the responsibility of giving or arranging for the obtaining of a pair, this is only the beginning, economically and socially, of the problem—economically, because there may be breakage in a week, or the need of a change of lens in 6 months or a year. If perhaps the patient has been in a position to pay for his first glasses and later is out of work and needs them, it is essential to help him, either through the social service organization, if its rules will allow, or in some other way. Since, as the clinic grows, the need for providing glasses steadily increases, the annual count must be taken into consideration as new patients are registered. The keeping of statistics will help in planning the worker's time and money allotted for the coming year. For instance, in 1929 a certain social service agency was arranging for 20 glasses per month; in 1933, 50 per month; and in 1936, 95 per month. The amounts in loans and gifts had rearranged themselves over these years from twice as many loans previously, to merely half as many, later. Therefore it is necessary that these records be watched in order to continue the pace originally set. If, for some reason, this cannot be continued, the statistics will supply a gauge and show the necessity for cutting down the number of new cases, to allow means of caring for persons already on the books and for limiting the intake of new glasses.

There is one other economic responsibility and that is to arrange to have some funds available for the procuring of glasses. Providing a patient with an excellent refraction and then giving him the prescription, when he has no means of having it filled, are of little help either in preventing distress or preventing blindness—temporary or otherwise.

The Social Responsibilities of Each Case

The social responsibility has perhaps four divisions. The first is the referring of patients to the sight conservation classes. Occasionally the need arises of informing the sight-saving class of improved vision, which would permit the child to attend regular classes. In that case it is advisable to write graphic interpretative letters to the regular school and perhaps check up for a while,

either through the family or by visiting the school directly, to ascertain whether any help should be given or suggested. This procedure is necessary for the highly myopic child. If the school realizes the medical situation sufficiently and understands why the child was perhaps not making the proper grades, it could arrange for a reader, or the case-worker could do so. Until the establishment of a sight-saving class in the district has been arranged, ingenuity and medical knowledge will have to be applied in each individual case. I believe this last holds true even when these classes are available. There may be extenuating circumstances, at least temporarily, which may make it necessary to adjust a patient in a regular class.

Another social responsibility in procuring glasses is not to lose sight of the whole patient. This entails, first, the carrying out of the medical recommendations—hygiene, lighting, etc.—depending on the medical diagnosis; secondly, the understanding of the social diagnosis and treatment and where the social impinges on the medical diagnosis and, in some instances, such as in primary glaucoma, where the social aspects may be part of the etiology of the disease. In a case of progressive myopia, for instance, in a twelve-year-old boy with an inadequate income, who lives in a crowded home, and who helps by selling papers in the subways at night, one naturally does the expedient thing first, which is correcting the vision with glasses. Then there is the problem of increasing the income while at the same time stopping the child from selling papers. The family must be educated regarding the patient's needs. They must be made to understand the importance of getting this boy away for two summer months where he will have good hygiene and can enjoy group work, during which time the economic situation in the home is being improved. When this is made clear to the patient, or patient group, the preventive aspects of the trouble, such as the hygiene and check-up of refraction, as a follow-up, is just a routine. Since myopia tends to run in families, it is well to inquire regarding other children.

A second example in seeing the patient as a whole is that of primary glaucoma. Perhaps he needs reading glasses, and for that reason has been referred to the social worker; but perhaps even when he has his eyes directed toward his newspaper his mind is

not directed there, for he is bothered by a sick and nagging wife who will not go to the doctor herself. Let us say that this man of 50 has 20/20 vision, practically perfect fields, and tension that remains under control. The two objectives of preventing blindness and alleviating his distress would be achieved if the emotional factors in the case were analyzed—in this instance, the wife and the patient's attitude toward her.

The next responsibility probably cannot be placed upon the case-worker alone. Whose responsibility is it to help direct a child who finishes a sight-saving class in elementary school to a proper high school? or from a high school into a vocation or further training? This is an essential step he is making. If he has been in a sight-saving class he has been pretty much the white-headed boy. And these very children who are the most handicapped need most to be taught independence and to increase other abilities to compensate for their handicap. In place of this, frequently, such a child is spoiled more than the other children, at home as well as at school. The teacher, often, in her anxiety to see him pass, practically does the work for him. Then when he graduates from elementary school the chances are that he will be allowed to drift into the school he chooses. The parents, in their eagerness to see him "normal," allow it. A similar situation obtains for this child when he is 16 and can go to work; or for a child who has been able to graduate from high school but, because of his high myopia, should have some vocational advice before plunging into the industrial world. Each child's future must be worked out on an individual basis. The schools do not always understand about the visual handicap nor the vocational adjustment. The child changes schools just as he may also change clinics. Moreover, the medical social worker must not be depended upon forever. Therefore, as I see it, we must instill in the patient and the parents what we believe they should realize concerning the child's best future interests. In the cases of progressive myopia, for example, if the doctor advises it, we must teach them to lead the children away from football to pleasures of the mind. Doctors sometimes disagree in these recommendations. To take away all that a boy enjoys does not seem good prevention. His spirit is to be considered. Besides, if you do this in the case of a very high myope, for

example, and he goes out for the simple pleasure of a walk and either stumbles off the curb or on a banana peel and has a retinal detachment, what good has resulted from making him unhappy during months of deprivation?

And so I say it can be no one person's responsibility to direct the education or vocation of a visually handicapped child. But it is up to the social worker to do what she can in the time allotted. Some parts of this can be accomplished by getting *en rapport* with the child and the parent so that they understand the implications in a sane way and feel that they have someone to consult. The social worker can interpret to the school. She can be certain that the patient's name is in the follow-up file, which will carry his problem along for her or the next worker. In this way, fewer children will get into and continue in regular high school who cannot carry on and hence become frightfully discouraged.

The fourth social responsibility is the follow-up, unless this is accomplished by the clinic management, or other plan in a different type of agency. The follow-up is a routine which can be managed with good results by a well-trained clerk only if the social worker has screened the case and knows what the situation is. A good response from follow-up will never be attained unless there are no obstacles in the way of the patient's understanding and carrying out the treatment. For this follow-up, a card file or some similar system is necessary. The system should be so planned as to give the patient a reminder that time has gone by, and to furnish the data at the end of the year which will show the degree of accomplishment achieved.

The social implications of strabismus are far reaching. Beyond the actual saving of vision before it is lost through amblyopia, there is the saving of personality, in many cases. We still have adults who have continued wearing glasses and, like the ostrich, only fool themselves. If you are astute, you will be able to find out how unhappy they have been about it all and perhaps that they use this defect as a reason for not keeping or getting a job. With the young child whose mother usually prefers trying glasses first before operation for correction, it is, of course, necessary to arrange for these glasses. If the child is brought in early enough, it is important, for the preservation of vision, that his name be en-

tered in the follow-up file so that in time he can have the proper operation.

Glasses for Cataract

We have considered the social implications for the correction of astigmatism, hyperopia, myopia, presbyopia, and strabismus. There are also glasses for cataract. My main problem here is to warn patients not to be discouraged about getting used to their distance correction and to be sure to walk with someone in the beginning when they go on the street. Without their normal lens they, of course, have no power of accommodation and they must learn the trick of "seeing" steps or a curb lying ahead of them. In a very short time they adjust themselves and are happy. There is one social difficulty with glasses for cataract and that is the fact that the patient's eyes appear so large. Despite perhaps having perfect vision, they sometimes have difficulty in certain types of work where they must appear presentable, such as the work of a waiter.

A type of glasses much mentioned these days are telescopic glasses. They are not always satisfactory, even when the vision can be well corrected. This is because of two factors: one is the weight and appearance of these glasses and the other is the extremely contracted field for reading. We have given two pairs to children who had been through sight-saving classes. These glasses have helped them go through regular high school with normal, though slow, reading ability. Another pair is used by a man, a cleaner in an institution. He also belongs to an orchestra. Though the glasses do not help him in his work, they do give him pleasure in reading the musical score and in other reading.

Contact Glasses

Contact glasses have their social uses. A girl of 20, a dancer, thought that she was having difficulty holding a job because her vision was so poor without glasses that she could not recognize her own boss if she met him on the street, and, of course, she could not wear glasses on the job. Uncorrected, her vision was 5/200 and with a minus 5 lens it was corrected to 20/15. The interior of the eyes was negative. The question comes up, what should be one's attitude in helping this myopic woman to be a dancer? It does

not seem to be a progressive condition. She is full grown. She is not a high myope. Her life, as her mother's before her, centers around the stage. Should her work be changed? With all her present economic and other insecurities should one even mention the fact that dancing may not be good for her eyes, when at the same time there is only a long chance that she would be in for trouble, and her vocation is a fixed thing? I bring up this social aspect because it would show again the necessity of individualizing in each case and not going by rote. At any rate, the girl in question was fitted with contact glasses and she is riding on the crest of the wave.

Summary

Thus we have suggested the community aspect of the problem; the fact that to do the job satisfactorily for the patient as well as for herself, the social worker must individualize; and, thirdly, we have considered the social worker's responsibility, economic and social. One must know primarily how to deal with people and to interpret the medical diagnoses, with their social implications. The rest of what is done depends on the group handled by the particular institution and that institution's limitations. The method of procedure is the same in every medical social service.

The Ear, Nose, and Throat in Relation to Blindness

J. H. Sulzman, M.D.

IN this article Dr. Sulzman points out how ear, nose, and throat specialists do their part in preventing blindness by treating the various focal infections which can, if allowed to progress, affect the health of the eye

IN a consideration of focal infection as related to blindness, it is necessary to recall that vision is a function performed by a complicated pathway, composed of the eyeball, optic nerve, optic chiasm, optic tracts and radiations, and mid-brain and occipital lobe centers. Also, that blindness may be complete or partial, and that the extensive pathway of visual impressions traverses the anterior portion of the skull and the posterior two-thirds of the major portion of the brain substance.

For purposes of convenience, the subject matter will be treated in the following order: (1) throat, (2) ear, (3) nose and nasal sinuses, and (4) miscellaneous considerations.

The Throat in Relation to the Eye

The throat or pharynx is a junction of the air and food passages, beginning at the posterior part of the oral cavity, and extending to the level of the larynx and upper end of the esophagus. It is of importance in a consideration of blindness in that it includes structures of considerable importance as possible foci of infection, which may be the lodging place and portal of entry of a variety of pathogenic organisms. These foci are the lymphoid structures of the palatine and lingual tonsils, the adenoids, and less condensed nodules of the same type of tissue. Micro-organisms may gain entry to the bloodstream by being filtered through these struc-

tures, and the actual organisms or their toxins may cause ocular conditions, some of which result in partial or complete blindness.

The throat may also be the site of tumor formation, which may similarly be a possible cause of blindness through so-called metastases, or spread, through the vascular routes to invade the visual pathway and endanger vision, or even life.

The Ear in Relation to the Eye

The ear is the organ of hearing and equilibration. It is embedded in the substance of the temporal bone, which also conveys the motor nerve to the muscles of facial expression, including the eyelids. The temporal bone gives its name to the temporal lobe of the brain, directly above it, through which passes the optic radiation, a part of the visual pathway. An important part of the temporal bone is the mastoid process, immediately behind the external ear and communicating with the middle ear. Inflammation of the middle ear frequently extends backward to involve the mastoid, and, occasionally, to include the lateral sinus, which is a very large blood channel encroaching on the mastoid area. Through the lateral sinus, organisms may enter the bloodstream to carry infection to various parts of the body, including the eye, with serious results.

Inflammation of the mastoid may spread upward to cause meningitis, and this may occasionally extend and become a localized process in the temporal lobe, constituting a brain abscess in the area of the optic radiation, with loss of function of the optic radiation fibers involved. Finally, the facial nerve, which carries motor function to the muscles of the face and which runs through the substance of the mastoid bone, may be involved in mastoiditis, either as a result of destruction by an extensive inflammation, or by injury during surgery for removing the diseased portion of the mastoid process. Whatever the cause, destruction of the function of the facial nerve results in a paralysis of one side of the face. This is turn leads to inability to close the eyelids completely, which exposes the cornea to infection and ulceration. Cases are not infrequent in which ulcers from this combination of circumstances have resulted in corneal opacities, even perforation of the cornea, and loss of vision by intra-ocular infection.

Not only a brain abscess but an intracranial tumor may cause blindness, in the form of a new growth arising from the nerve of hearing—the "acoustic neuroma" of the auditory nerve. This may cause blindness as a result of pressure on the optic pathway fibers or on the center of vision in the occipital lobe of the brain in the back of the head. Also, by increasing intracranial pressure during its growth, it may cause edema of the optic nerve, with later atrophy of this nerve and blindness of the eye on the same side as the tumor, or of both eyes. In any event, an acoustic neuroma is extremely serious, and frequently exceedingly difficult to diagnose.

The Nose and Nasal Sinuses in Relation to the Eye

The nose and accessory nasal sinuses act as air passages, as the site of the sense of smell, and as chambers where air breathed in is warmed and moistened on the way to the lungs. This is possible because the membrane lining them is extremely well supplied with blood vessels, some of which traverse the orbit. These latter may act as pathways of infection from the nose and sinuses to the orbit and eye.

The passage for drainage of the tears—the lacrimal duct—is a direct connection between the nose and the outside of the eye. The importance of the lacrimal duct may be realized when it is stated that nasal infections can ascend the duct and bathe the outside of the eye with infectious material. This hazard is especially likely when the eyeball has been opened surgically. In other words, an operation on the eye can result in loss of vision if organisms from the nose reach the operative site by way of the lacrimal duct.

Besides the blood vessels and the lacrimal duct, another possible pathway between the nose and the eye is through the lymphatics, which drain the tissues in this region, as they do in every other part of the body. And, finally, the eye is closely connected with the sinuses by its anatomical position, being in relation superiorly with the frontal sinuses, medially with the ethmoid sinuses, inferiorly with the maxillary sinuses, and posteriorly with the sphenoid sinuses. These sinuses, especially the ethmoid sinuses, are separated from the orbit by relatively thin walls of bone, so that sinus infec-

tions often break through to invade the orbit, its lining membrane, and delicate contents. This is occasionally rendered even easier when small perforations occur in the bony walls, offering direct access to the orbit in the presence of nasal and sinus infections, or during surgery in the interior of the nose.

Such thin walls of bone may be readily destroyed by the pressure of tumors arising in the sinuses, or by disease of these bony walls themselves. Also, they may be accidentally perforated by routine intranasal treatments, as in irrigations of sinuses. Fortunately, the latter occurrences are rare, and have practically no sequelae. Orbital infections do not always result in damage to the eye, and even if not drained by operation, have been known to clear up by being absorbed gradually.

Tumors in the nose and sinuses may cause blindness, whether they appear in the form of benign swellings or in the form of malignant tumors arising from the mucous membrane lining the sinuses, the so-called carcinomata, and those arising from connective tissue, or sarcomata. These are especially vigorous in growth and are always dangerous to vision and life.

The optic nerve is vulnerable to extension of inflammations in the sphenoid and posterior ethmoid sinuses, and frequently these sinuses may be so arranged anatomically as to surround the optic nerve partially or completely, and are separated from it by thin walls of bone subject to all the variations described above. This constitutes retrobulbar neuritis when the nerve is inflamed behind the eyeball, and the exact importance to be ascribed to the nasal sinuses is not a matter of agreement among ophthalmologists or otolaryngologists.

Lastly, the problem of focal infection from such sites as the tonsils and nasal sinuses, and the result of such infection upon the eye and optic nerve, are subjects of dispute among physicians. There is evidence both for and against the theory that infection in distant foci may cause eye diseases under certain circumstances. Among the conditions ascribed to focal infection are: inflammations of the coats of the eyeball—scleritis, choroiditis, retinitis and macular degeneration—also iritis and optic neuritis; and disseminated ocular infections—endophthalmitis and panophthalmitis. It is certain that improvement in eye diseases which can

produce blindness has followed the removal or drainage of such infected foci in many cases, though not in all cases.

In conclusion we can understand the complexity of the problem of blindness in its relation to the ear, nose, and throat when we understand in how many ways they can be involved in a variety of disease processes, and how the ear, nose and throat specialists can aid in the prevention of blindness.

Research and Prophylaxis in Sight Saving

A Tribute to Winifred Hathaway*

Park Lewis, M.D.

DR. LEWIS, in presenting the Leslie Dana Gold Medal to Mrs. Hathaway, discussed the partnership between the layman and the medical man in saving sight. Mrs. Hathaway in her response enumerated the distinguished recipients of the Dana Medal who preceded her and sketched their respective contributions to sight conservation.

THE future development of ophthalmology must follow along two parallel lines of direction. The first of these will take its origin in research.

We must know more of the causes of obscure ophthalmic disturbances. We must discover more exactly the cellular interchange that takes place in the deeper eye tissues. We must investigate more intimately the chemical processes that are active in the ultramicroscopic structures in the living cell, and the conditions that modify them, conditions that unbalance the intra-ocular tension, that affect the nutrition of the lens, that destroy the intima of the arterioles, replacing the elastic fibers with mineral deposits. These, and a multitude of equally important problems, are now awaiting solution.

To get an answer to any of these puzzling questions is to take a long step toward preventing them.

So the second activity in the ophthalmology of the future will follow the line of preventive measures.

Research and prophylaxis will be our watchword during the coming year. Both have been carried on independently almost

* Remarks by Dr. Lewis in presenting the Leslie Dana Gold Medal to Mrs. Winifred Hathaway, at a meeting of the Association for Research in Ophthalmology during the convention of the American Medical Association in Atlantic City, June 8, 1937.

since the beginnings of medicine. We have always sought to know how disease was caused and how it might be avoided. As organized movements, both are relatively new, but their purposes are so closely allied that it seems eminently fitting that a meeting of the Research Society should be the occasion and the place chosen to do honor to one who for two decades has been an active leader in the movement for the protection of human sight.

When Mr. Leslie Dana established a fund which would provide a gold medal to be presented annually to one chosen for distinctive service in the prevention of blindness, he perhaps acted more wisely than he knew. He realized, beyond doubt, that vast numbers of eyes go to destruction before they reach the ophthalmologist's control, that multitudes of people, through indifference or ignorance, neglect menacing symptoms even after they have been warned of their danger, and he hoped by bringing more closely together the skilled specialist and the public, that this gulf might be bridged and the unnecessary losses of eyes diminished. But he did not know, and he could not have realized, the ethical barriers that had to be bridged to make preventive measures reasonably effective. The physician, although he may daily have pathetic instances of people seeking help after irreparable damage has been done to their eyes, may not personally go into the highways and byways to warn them lest his motives should be misinterpreted.

When the National Society for the Prevention of Blindness was organized, more than a quarter of a century ago, the medium through which this could be done was established. The founder, Louisa Lee Schuyler, was socially minded. She anticipated the Red Cross in the personal service which she rendered during the Civil War. Through her efforts the Children's Aid Society was organized.

Her shrewd intelligence and her wide experience made it at once apparent that expert medical knowledge was of first importance in any preventive movements undertaken, but that, this having been secured, it would be ineffective unless, and until, socialized. So in the formation of the Society the directorate included in its membership some of the most eminent ophthalmologists in the country. Their advice and their co-operation were continually sought and freely given. Among those whose labors have been fin-

ished were such men as Hiram Woods of Baltimore, Posey of Philadelphia, Cutler of New York, Wilder of Chicago and Wilmer of Washington.

We bow in reverent memory as we speak these names.

The first to receive the distinguished service medal was the Dean of American Ophthalmology whom we all delight to honor, Edward Jackson. The second, indicating the liaison between social service and medical practice was the founder of the movement, Louisa Lee Schuyler. Then followed such eminent leaders in ophthalmology as de Schweinitz, Wilder, Luedde, Wheeler, de Lapersonne, to whom it was presented in Paris, and Fuchs, who was its recipient in Amsterdam at the Thirteenth International Ophthalmological Congress in 1929.

Then again the social relationship was emphasized when the medal was presented to our lamented Dr. Edward M. Van Cleve, who for eight years was a director and manager of the National Society for the Prevention of Blindness, and whose wisdom and judgment led it around many pitfalls.

There was, however, quite another phase of preventive work which was actually a part of the responsibility of the ophthalmologist, but which he had been wholly unable to control. It had long been realized that the rigid curricula of the schools were not suited to eyes that were unable to tolerate continuous and exacting work. But what could the physician do where school arrangements were unalterable? The child could indeed be ordered to discontinue his studies for one or two years, but the hardship of interfering with his education and halting his progress might be equivalent to changing the entire future possibilities of his career.

In 1908 Mr. Bishop Harman endeavored to solve the problem by causing myope schools to be established in London. In America this matter was of equal importance; that it concerned the child, the parents, the physician, and the school authorities was self-evident.

A complete understanding and the fullest co-operation among all four were needed to meet the situation. Ophthalmologists had shown that as the school age progressed the numbers of myopes increased and the degree of myopia with each school year grew higher.

But they had no control over the school curricula. This rested with the educators. The parents, anxious as they were for the preservation of their children's eyes, could not exact special privileges for individual children. Then there came an impasse. Those who knew what should be done could not control conditions, while those in authority in the schools had not yet been sufficiently impressed with the necessity to make radical changes in the routine methods.

In April, 1913, chiefly through the efforts of Dr. Edward E. Allen, superintendent of Perkins Institution and Massachusetts School for the Blind, the first sight-saving class was established in Roxbury. Cleveland followed suit: in September of the same year a class was established through the efforts of Robert Irwin. These classes made a firm foundation on which to build, but a national interest was necessary for further development.

In 1916 the National Society for the Prevention of Blindness had the rare good fortune to add to its staff Winifred Hathaway, a woman of exceptional gifts and of unusual training. A graduate of Radcliffe, she had taken her Master's degree from the University of New York. She had had teaching experience in the Department of English and as Director in the Department of History at Hunter College, New York. She had organized classes and clubs for working girls, and had done research work for the State of Massachusetts. As a teacher and principal and a former social worker, she immediately recognized the importance of bringing to the educators the urgency, in the care of partially seeing children, of intelligent medical control of the situation. An educational campaign was instituted. During the past two decades she has addressed hundreds of audiences of parents, teachers, social workers and children on this subject. She has given courses for the training of teachers and supervisors of sight-saving classes at Columbia University, New York University, the University of Cincinnati, the University of Southern California, Peabody College and numerous normal schools. She has been for years the guiding spirit in the sight conservation movement among American educators.

Largely through her personal inspiration and encouragement sight-saving classes for the education of school children with defective vision have been established in many communities. There are

now 525 of these classes in 169 communities throughout the United States, and their numbers are increasing.

In order to foster the idea of making education possible for partially sighted, this messenger of light has visited practically every section of the United States, travelling thousands of miles, speeding the message that children with visual handicaps need special classroom facilities and special teaching methods. After she spent some months in Hawaii, a native pupil nurse was sent to New York so that she might learn and carry back to those distant Islanders the principles of the prevention of blindness and of the formation of sight-saving classes. A cultured and educated Egyptian woman came over here for instruction, and a serious-minded Japanese student is planning to come in the near future. Could any measures be more likely to develop international friendships and to promote amity between the nations than these?

Mrs. Hathaway's influence in modern education has extended beyond the borders of the United States. In 1926 and 1932 she visited Europe to confer with educators and ophthalmologists concerning the work of sight-saving classes. On the latter visit she represented the United States at the Conference in Paris of the International Association for Prevention of Blindness. While the sight-saving classes originated in England, the greater development of the idea in America has given an impetus to the establishment of additional classes in many countries.

This is but a partial list of the great services to humanity that have been so quietly and modestly rendered by this distinguished woman. The tale is but half told when we say that she has doubtless brought the story of the need and the methods of safeguarding sight to a larger number of persons than any man or woman in the United States.

Because of the things that she has done, because of her selflessness, of her thoughtfulness, her self-abnegation, the altruism that has characterized her every daily act, we have summoned this woman, Winifred Hathaway, that we may do her honor in the presence of her collaborators, the ophthalmologists of America.

And now by virtue of the authority vested in me by the vast multitude of those to whom she has brought light, I hereby proclaim that Winifred Hathaway shall no longer be designated as

ordinary women are, but that she shall be known as Lady Winifred, the Beneficent, the Light-Bearer, and in token thereof we have caused to be graven on a disc of minted gold her new name: "The Lady with the Lamp."

Response to a Tribute

Winifred Hathaway

In undergraduate days there was, at commencement, a supreme moment when the candidates for the Ph.D. degree, having gone to the platform to receive their honors, the President held out his hand to them and said, "I welcome you into the goodly company of scholars." It always seemed as though a door suddenly opened admitting them to that goodly company that had already passed through. This medal indicates the opening of just such a door of opportunity and it is indeed a goodly company on the other side.

Edward Jackson, the first recipient of this medal, is dean of ophthalmologists. Perhaps he can best be characterized by an incident that occurred at a conference at which a teacher was giving a demonstration lesson to a group of children on choral speaking. She was very anxious to have the members of the audience enter into the spirit of what she was about to present, but did not know how to include them. She need not, however, have been anxious, for there in the front seat was Dr. Jackson, eager to participate. In a moment he was swaying rhythmically with the children to the cadence of the verse and rocking an imaginary baby in his arms as he crooned, with them, the lullaby. One by one the people in the audience joined; all self-consciousness had disappeared. The demonstration was a success because everyone there subconsciously recognized that where Edward Jackson leads, it is not only advantageous, but interesting, to follow.

Louisa Lee Schuyler was one of the founders of the lay movement for the prevention of blindness which later grew into the present national organization. At her mother's knee she learned service to humanity and devoted herself to this during her long, useful life.

Lucien Howe, father of ophthalmia neonatorum legislation, interested in heredity and in euthenics as factors in preventing blindness and saving sight, was founder of the Howe Laboratory of Research, in which others are carrying on the work for which he laid the foundation.

Ernst Fuchs, international dean of ophthalmologists, when a young professor of ophthalmology at the University of Liége, awakened the world by his essay on the causes and prevention of blindness, a work as virile and far-visioned today as it was when he wrote it, over fifty years ago.

Park Lewis, beloved physician, with Miss Schuyler one of the founders of prevention of blindness work in America, is a connoisseur of literature, of music, and of the other arts. Where preventing blindness and conserving sight are concerned, he recognizes no boundary of nation, race, or creed.

George E. de Schweinitz is a name to conjure with in ophthalmology. He is a prolific writer who early realized that to be a great teacher one must always be a great learner.

Edward M. Van Cleve, preceptor, guide, friend! Out of his daily contact with the tragedy of blindness grew his greater work of preventing like tragedies. In a world grown skeptical because of war and disillusionment, he kept his faith in the things of the spirit and on this he built a living monument.

William H. Luedde—how better can he be characterized than as the Spirit of St. Louis!

Professor de Lapersonne, a gentleman of the old school, was French by birth, tradition, and education, but international in mind and in spirit.

William H. Wilder's broad social viewpoint led him to believe that the more people knew and understood, the more they would co-operate in working to bring about desirable results, and hence he taught them.

John M. Wheeler—how often have his skilled fingers held back the threatening curtain of darkness and let in the light? Skilled fingers that have carved for him a niche in the highest place of eye and plastic surgery.

A goodly company! Indeed, so goodly a company that each would ever have in remembrance the fact that his achievement was

made possible by the work of others; research workers, who are striving throughout the world to find the causes of difficulties and methods of eliminating them; the gallant company of men and women who made human test-tubes of themselves so that the knowledge resulting from their suffering and even from their death might assuage and if possible prevent the pain of others; the general practitioner and the obstetrician who, stressing prenatal care and prophylaxis at birth, have done so much to reduce the incidence of blindness and impairment of vision; the pediatrician, who recognized the necessity for the early treatment of strabismus; the neurologists, who have searched out the relation between eye difficulties and nerve centers, and have made possible the early diagnosis of brain tumors; the army of nurses and medical social service workers—Aarons to the Moses of the medical profession, holding up their hands that their strength might be multiplied; the educator; the illuminating engineer; the printer; and the host of others who have directly or indirectly helped to keep eyes capable of seeing.

Many years ago a little girl was given a small silver medal bearing a long name, "scholarship." She probably understood little of its meaning, yet she wore it proudly and perhaps she strutted a bit before the other children. But the wisdom of accumulated years has taught her that then, as now, the medal was given for motive rather than for achievement, and so to Mr. Dana, who has made this exquisite symbol possible, to the St. Louis Society, that has so graciously awarded it, and to all those who have a share in this honor, in the words of the whimsical Barrie, "The old lady shows her medals."

Editorial

Comments of Newspaper Editors

THE work of the National Society for the Prevention of Blindness is a subject of frequent editorial comment in newspapers throughout the country. We are reprinting below a few recent ones which are typical:

Conserving Sight

With the opening of schools in Las Vegas and San Miguel county, it is opportune to call to the attention of parents the necessity of conserving the sight of their children. It is to be remembered that approximately three million school children, or one-eighth of the entire school population of the nation, are handicapped in their education by defective sight, and a proportion of those youngsters are right here.

The National Society for the Prevention of Blindness has made much progress in the gigantic task of conservation of sight, but the co-operation of schools and parents is needed. The schools are doing excellent work in determining sight defects and endeavoring to obtain adjustments, but the real task is up to the parents.

The importance of good eyesight among school children cannot be overestimated. We have come to recognize that defective vision or disease in the eyes of the child not only may have detrimental influence on his school progress, but may react upon his general health and upon his adjustment to his school, his playmates, and even to his family. This recognition has given new impetus to the work of discovering and correcting visual defects among children, beginning with preschool age.

Farsightedness is the most common visual defect among school children; astigmatism is next in frequency, and nearsightedness is third; other common eye defects are cross-eyes and inflammation of the eyelid lining. Each should be corrected as soon as revealed.

Las Vegas (N. M.) Optic
September 9, 1937

Safe and Sane Fourth

As fireworks accidents are particularly menacing to the eyes, it is fitting that the National Society for the Prevention of Blindness, Inc., is the first national organization to make a forcible appeal for a safe and sane Fourth of July this year. Although that benevolent corporation appreciates the general Independence holiday hazards, it naturally places most emphasis on fireworks. Of all the effects of non-fatal accidents, blindness may be the most deplorable.

The folly of relying only on private initiative for protection against fireworks injuries was demonstrated long ago. Public education has contributed to the tremendous reduction in the number of deaths from fireworks in the last 30 years, but legislation has been the most positive factor. The fact that it is barbaric to celebrate the nation's birthday with excessive noise and injuries, deaths and property loss from fireworks is written into many municipal ordinances and some state laws.

This legal regulation of the fireworks traffic apparently will be extended. Certainly there is no evidence of a return to the old deplorable conditions; and the sustained agitation for more regulation is likely to be fruitful. Unfortunately, enforcement of the existent fireworks control laws is not uniformly good; and too many people seem disposed to permit their children to incur grave risks near and on the Fourth of July. The effects of such carelessness cannot be emphasized too much by such organizations as the National Society for the Prevention of Blindness.

Union City (Ind.) Gazette
July 2, 1937

Problems of the Day

The world has always been as kind as possible to the blind. In modern years organized charity has done wonders to help the sightless. But no period before our own has gone out of its way to help those who might become blind. Neither has organized charity done much to save those who might be saved from sightlessness. It seems to have been the case that the world has been willing to give pity but not relief. However, in recent years the National Society for the Prevention of Blindness has come into existence, a most hopeful event. Through efforts to require treatment of newborn babies' eyes, to demand that industry give protection to employees and through other means, blindness is far less prevalent than heretofore. The Society faces a big task, for those who must co-operate have not yet done so sufficiently. Unfortunately the public, not to mention such smaller groups as legislators, doctors and industrialists, have remained apathetic. Now that the new school year is starting, the society renews its campaign for co-operation. The society maintains that eye defects which are not corrected, as they can be to a large extent, may result in loss of sight and also have other harmful effects, such as lack of interest in study or unsocial development. Teachers throughout the country can do much. They can discover what children have eye defects and persuade them to have treatment. Their co-operation is most important to the cause of prevention of blindness.

Brooklyn (N. Y.) Citizen
September 9, 1937

The Forum

THIS section is reserved for brief or informal papers, discussions, questions and answers, and occasional pertinent quotations from other publications. We offer to publish letters or excerpts of general interest, assuming no responsibility for the opinions expressed therein. Individual questions are turned over to consultants in the particular field. Every communication must contain the writer's name and address, but these are omitted on request.

Legal Status of the National Society for Prevention of Blindness

NOTE.—The following excerpt from a letter by a member of the board of directors of the National Society for the Prevention of Blindness in answer to an inquiry regarding the legal status of the Society will be of interest to REVIEW readers who are familiar with many aspects of the work of the Society.

I have been a member of the board of directors and of the executive committee of said corporation since March, 1934. I am also a member of its finance committee. The law firm of Gould & Wilkie, of which I am a member, has been legal counsel to the corporation since its organization in 1918, and to the predecessor unincorporated association for a number of years prior thereto.

Prior to 1918 there had existed an unincorporated group of individuals, ophthalmologists, educators and philanthropists, interested in the prevention of blindness and conservation of vision, known as the National Committee for the Prevention of Blindness. It was the function of this committee to assist local agencies throughout the United States in the philanthropic activities mentioned, to promote the organization of such agencies, and to foster programs for the education of the public directed to those ends, and otherwise to promote the prevention of blindness and conservation of vision by such means as could best be employed through a national organization as distinguished from local agencies.

In order to attain stability of organization it was found advantageous to incorporate this central organization. Accordingly, as of January 31, 1918, a corporation was formed under the Membership Corporations Law of the State of New York, with the corporate name National Committee for the Prevention of Blindness, Inc. The ac-

tivities above mentioned have been subsequently carried on by said corporation. On December 30, 1927, the name of the corporation was changed to National Society for the Prevention of Blindness, Inc.

The purposes of the Society and the scope of its activities are, as set forth in its charter and by-laws:

1. To endeavor to ascertain through study and investigation any causes, whether direct or indirect, which may result in blindness or impaired vision;

2. To advocate measures which shall lead to the elimination of such causes;

3. To disseminate knowledge concerning all matters pertaining to the care and use of the eyes.

As the name of the corporation and its expressed purposes imply, it is concerned with the prevention of blindness and conservation of vision, not with the care and betterment of those already blind. In this respect it operates in a field peculiarly its own and performs a much needed service to society. Particular attention is given to:

1. Advocating adequate prenatal care for every expectant mother, including a blood test and treatment when necessary, as the first steps in the program of preventing blindness from prenatal syphilis.
2. Urging the need for the universal use of prophylactic drops at birth to protect babies' eyes from infection.
3. Demonstrating an approved method of testing the vision of preschool children in order to discover those who will benefit from early treatment.
4. Co-operating with educational authorities in:
   a. Conserving the vision of school and college students.
   b. Establishing sight-saving classes for children whose vision is so defective that they cannot profitably use ordinary school equipment.
   c. Providing specialized training for teachers of sight-saving classes.
   d. Helping student-teachers secure better preparation for meeting the eye health problems of school children.
5. Assisting nurses to become increasingly aware of their opportunities for saving sight and aiding in their preparation for this work.
6. Collaborating with those who are striving to reduce eye injuries and eyestrain in industry.
7. Demonstrating the value of specially trained medical social workers in eye hospitals and clinics and helping such workers to secure specialized training.
8. Stimulating and sponsoring research in relation to the causes of blindness and impaired vision.
9. Providing the public with information concerning the care and use of the eyes.
10. Serving as a clearing-house on all matters pertaining to the prevention of blindness and the conservation of vision.

The Society responds to numerous requests for advice from states, municipalities and industries. The

effectiveness of its work is statistically demonstrated by notable reductions in the cases of preventable blindness as a result of its work.

While the Society derives a certain amount of income from invested funds, representing previous legacies and gifts, it annually expends a much larger amount, the balance being obtained chiefly by numerous private subscriptions of relatively small amounts and in part through liquidation of investments. It is not the aim of the Society to accumulate funds for an indefinite future, but rather to take care of current needs from its current resources. The nature of its work is such that its public usefulness can be materially enhanced by any increase in its resources. There are numerous fields in which its work would be of great public benefit, from which the Society is precluded, or in which its activity is limited, for lack of sufficient funds.

The Society is not, and has never been, a stock corporation nor a profit-making enterprise in any sense. It is conducted solely for charitable and educational purposes. No director, officer, member or employee of the corporation receives, directly or indirectly, any profits from the operation of the corporation. Compensation, reasonable in amount, is paid only to the executive and clerical staff and for professional services rendered in capacities other than those of a director or officer.

The board of directors of the Society consists of thirty prominent individuals in various walks of life throughout the nation, including a number of leading ophthalmologists. The Board meets usually twice a year, at which times it formulates the general policies to be pursued by the corporation. Between meetings of the Board, responsibility for the conduct of the corporation's affairs rests with the Executive Committee, which meets about six times a year, while the immediate activities of the corporation are managed by an executive staff headed by the Managing Director (not a member of the Board). The Executive Committee maintains careful supervision of all work done by the Society and the expenditure of its funds.

MASON H. BIGELOW
New York, N. Y.

Sight Saving*

More and more the public is realizing the value of good sight and is, therefore, accepting the methods and resources of the modern medical specialist in the restoration of sight and prevention of blindness, or "sight saving." Such a program comprises one of the most, if not the most, important phase of the services rendered by the Ohio Commission for the Blind.

With the advance of biological, medical and surgical science, treat-

* Radio address delivered over Station WHKC, Columbus, Ohio, April 15, 1937.

ments and surgical procedures are being performed today which are little short of miraculous in restoring sight to those who are blind or partially blind. Yet how much better and wiser it would be to concentrate our efforts on preventing blindness than to depend upon the medical science of the future to restore sight needlessly lost.

Hereditary Eye Conditions

Sight saving should begin as soon as an infant is born, or, more properly, before birth. It therefore goes without saying that parents are really responsible for the condition of their children's eyes during the first years of their life. There are two classes, or conditions, which must be considered before the child is born. First, there are certain conditions causing blindness which are hereditary; that is, children born of parents blind from certain types of eye diseases, may, in turn, give birth to children who will likewise become blind of a similar condition. The sad part of this circumstance is that some day these blind children will not have their parents to depend upon, and will then be dependent upon whatever provision is available at that time. It does seem more humane for such parents to adopt a normal child, rather than to run the risk of burdening society with a blind one. Elimination of hereditary blindness would greatly reduce the work of agencies for the blind and the number of students in schools for the blind.

Syphilitic Eye Conditions

There is another condition to which I would like to call your attention. That is, syphilitic conditions as they affect the eyes of the newborn infant or occur during youth. Most of these blind children could have had useful or normal sight.

It would only have been necessary for the mother, as soon as she knew that she was to be a mother, to have had a Wassermann or Kahn blood test which would have disclosed the presence of a syphilitic infection if such existed. If syphilis is found to be present at such a time, it still is not too late to start energetic treatment and to give birth to a normal child. There is no mother so rich that she can afford to have a blind child, and none so poor that she needs to do so. And another point to remember is that all syphilis is not venereal, nor venereally contracted. No expectant mother has the right to give birth to a child blind from inherited syphilis because her pride would not permit her to submit to a blood test.

If we could eliminate this type of case—as we could if each expectant mother would co-operate by holding herself properly responsible for the eye condition of her unborn babe—statistics for the next decade would show a marked decrease in

the number of blind infants and children. For this reason we are especially anxious that parents of every walk of life should not allow their pride to cause them to place a false value on the importance of this danger—that they be not too certain that they have not accidently acquired a disease which they might pass on to their children, not to mention the danger of causing serious illness to themselves in later life. There are free clinics in the larger cities and there is the state laboratory which will run the tests for doctors in cases of indigent patients, so that a person's financial status is no reason for not having the benefit of this service which will do so much to safeguard the eyesight of the coming generations. It is much better to play safe than to be sorry; we might apply the slogan of the Better Business Bureau, "Before you invest, investigate." In this case you are investing in the most precious article on earth—human life.

CLAUDE S. PERRY, M.D.
Columbus, Ohio.

Note and Comment

New Sight-Saving Classes Established.—According to information received in the office of the National Society for the Prevention of Blindness, 17 new sight-saving classes were established this fall. These classes were opened in the following cities: Pasadena and San Francisco, California; Bridgeport, Connecticut; Blue Island and Cicero, Illinois; Kansas City, Missouri; Buffalo, Elmira, New York, Troy, and Yonkers, New York; Lincoln, Ohio; Chemawa, Oregon; and Wilkes-Barre, Pennsylvania.

A Campaign Against Trachoma.—Trachoma, that dread eye disease the cause of which is unknown, has for decades been prevalent in southern Illinois. Other sections of the state have largely escaped its ravages, but in 14 of the southern counties there has been a steadily increasing concentration of this type of conjunctivitis.

Many of the sufferers live in poverty on isolated farms, and, even though the Illinois Society for the Prevention of Blindness offered to give them weekly treatment, frequently they could not obtain transportation to the Society's clinics.

Obviously, it was necessary to provide not only facilities for treating the disease, but also some means of transportation for the hundreds of rural sufferers. And since the trachoma-infested area comprises some 3000 square miles, this problem of transportation gave the officials their biggest headache.

The problem was solved, however, by the Works Progress Administration.

A project, sponsored jointly by the Illinois Department of Public Health and the Illinois Society for the Prevention of Blindness and put into operation by WPA, now provides 20 bus runs covering the 93 towns in the 3000 square mile area where trachoma is most prevalent.

Besides bringing into the clinics patients from surrounding towns and villages, the WPA buses also pick up trachoma sufferers along the highways and byways of their routes.

To reach the bus routes, the patients walk, ride horses or thumb lifts in wagons or in any other available vehicle. For instance, into the Shawneetown clinic one day stalked an elderly woman dressed in a wrapper and a sunbonnet. She looked as if she had stepped out of a story book of the last century. She had ridden a horse bareback the three miles from her house to the bus line. There she had tied her horse, got in the bus, and traveled 20 miles more to town for her treatment. Afterward the bus took her back, and she unhitched her horse and rode home. She was 69 years old.

Trachoma clinics are in operation at Harrisburg, Vienna, Shawneetown, Herrin, Eldorado and Jonesboro.

Occasionally those clinics are located in somewhat unusual places. In Vienna, for example, a library basement was made available for the trachoma work; WPA renovated it and provided adequate equipment. At Jonesboro an old jailhouse was turned into a clinic; WPA repaired the building and made it suitable for medical work.

About 3000 cases, including several hundred suspected victims, are receiving treatment in the five clinics.

When the disease is not too far advanced, complete cures are possible, and even in extreme cases the progress of the disease may be checked and the advent of blindness at least postponed.

The trachoma clinics are effecting a genuine saving for Illinois taxpayers. Pensions for the blind in Illinois average $5000 a day, according to Miss Audrey Hayden, director of the Illinois Society for the Prevention of Blindness, and the education of a blind child in a state institution costs about $800 a year. WPA funds for bus clinic service amounted to $20,000, to which the state added $25,000 and the Society for the Prevention of Blindness $6,000. Figuring conservatively, if, on an average, blindness in the 1500 patients is postponed one year, the state will save in blind pensions during that year approximately $180,000.

Clinic reports indicate, however, that blindness will be in many instances entirely prevented, and in others indefinitely postponed.

Dr. Walter De François is in charge of the trachoma work in southern Illinois, and Miss Myrtle Chalstrom is supervising nurse.

This campaign against trachoma is merely one of many similar activities of the Works Progress Administration. During the past

two years WPA has initiated scores of health projects. Thousands of individuals have been taken from relief rolls and given employment on sanitation and health projects all over the country. The average number of WPA workers engaged in this type of work has been 78,000.

Seeing Through a Giant Eye.—A circular window, modelled in the form of a human eye, is contemplated as a dramatic exhibit at the New York World's Fair of 1939. Visitors will be able to move levers to reproduce the action of the pupil in changing its dimensions, exactly as does nature. By manipulation of another lever, they will see the panorama as it appears to a myope, or, again, to one who is a hyperope, or to persons suffering from other defects of vision.

Luminous Roads.—Increased visibility of roads has been attained by mixing red or yellow ocher with the road surface material, thus making the road somewhat luminous at night.

American Medical Association Meeting.—The following excerpts from the *Proceedings* of the American Medical Association, Section on Ophthalmology, Atlantic City, June 9 to 11, 1937, are of interest to the National Society for the Prevention of Blindness and to readers of the REVIEW:

"It was moved by Dr. Arthur J. Bedell, Albany, N. Y., duly seconded and carried, that the following resolution be presented to the House of Delegates:

"Whereas, The Federal Social Security Act in Title Ten has placed on the Social Security Board the responsibility of entering into co-operative arrangements with the various states for the purpose of aiding those states in granting financial assistance to needy blind individuals, and has ruled that individuals in the various states applying for blind assistance must be examined by an ophthalmologist or doctor of medicine skilled in the diseases of the eye;

"Whereas, The Social Security Board has advised the official state agencies that have the responsibility of administering this aid in those states to employ a supervising ophthalmologist who will have general supervision over the medical determination of blindness within the state; therefore, be it

"Resolved, That the Section on Ophthalmology of the American Medical Association approves the action of the Social Security Board in requiring that applicants for blind assistance within the various states be examined by a regularly licensed and registered doctor of medicine skilled in diseases of the eye or by an ophthalmologist, as such a procedure will serve to secure a fuller knowledge as to the causes of blindness within the United States; and be it further

"Resolved, That the Section on Ophthalmology of the American Medical Association goes on record as approving the suggestion of the Social Security Board that the official agency in the state or territory charged with the responsibility of administering blind assistance employ a supervising ophthalmologist whose duty will be the general supervision of the medical determination of blindness of those needy individuals applying for blind assistance; be it further

"Resolved, That the delegate from the Section on Ophthalmology of the American Medical Association be and is hereby instructed to present these resolutions to the House of Delegates."

Dr. John Green, St. Louis, read the report of the Committee from the Section to Co-operate with the National Society for the Prevention of Blindness. It was moved by Dr. Harry S. Gradle, Chicago, that the committee be instructed to make an analysis of the statistical tables of the cause of blindness as shown here and be prepared to report to this section at the next session. The motion was seconded by Dr. Arthur J. Bedell, Albany, N. Y., and carried.

Dr. William Henry Luedde, St. Louis, chairman, Dr. Adolph O. Pfingst, Louisville, Ky., and Dr. John W. Burke, Washington, D. C., were appointed to constitute the Committee to Co-operate with the National Society for Prevention of Blindness.

"Don't You Believe It!"—Under this title, August A. Thomen, in a recent *American Mercury*, exposes a number of popular misconceptions, among them the mistaken notion that the wearing of eyeglasses causes one to "get used" to them, and hence their adoption should be delayed as long as possible. He says: "The truth of the matter is that the present perfection of ophthalmology enables science to determine definitely when an individual needs visual improvement through glasses. If it can be ascertained by expert

examination that he does, it is folly to defer the matter for any reason, for glasses are worn for three primary purposes: (1) to prevent symptoms caused by eyestrain, or to correct them if they have developed; (2) to prevent further impairment of vision, and (3) to increase one's efficiency. It is not a question whether the wearer will 'get used' to the glasses, but whether he needs them to improve vision."

Westchester Safeguards Vision.—Beginning in 1934 a bi-weekly eye clinic has been held in Mt. Kisco by the New York State Commission for the Blind in co-operation with the Northern Westchester District Nursing Association. During the three years of the clinic's existence 76 clinics have been held, with a total attendance of 1,949 and a registration of 693 patients. Glasses have been prescribed for 404 patients, of whom 198 were adults. Eye muscle training, which is largely given in classes held regularly by the specialist in this work, has been recommended for 247.

Figures that Speak!—During the five years from 1931 to 1935, inclusive, the New York State Department of Labor awarded nearly $134,000,000 compensation on 395,000 occupational injury cases. Although eye injuries constituted only 2 per cent of the cases, they were granted 4 per cent of the compensation. These figures bear out the general impression that injuries to the eyes are about twice as serious as the average compensated injury.

That He Who Phones May Read.—Time was when a siege with the Manhattan Telephone Directory would send many a New Yorker into despair. Read, as it usually is, under dim illumination and in crowded corners, it made excessive demands on the vision. Faced with the necessity of printing in small type, with unleaded lines, in order to accommodate a large number of names, the New York Telephone Company had only one method of improving the legibility of its directory—through the use of a specially designed type face. This new type face, lighter in weight and simpler in form than that which has been used for the past twenty years, appeared for the first time in the Fall, 1937, issue of the directory and immediately won the enthusiastic approval of subscribers.

Mellow Lighting.—To provide bright but non-glaring light at a particularly dangerous railroad crossing the Bethlehem Steel Company has installed at its Lackawanna, N. Y., plant four sodium luminaire lighting units. The mellow orange-yellow light thus not only provides good visibility, but, by its characteristic color, suggests danger, and hence serves as a warning signal.

Vision Tests for Drivers.—The importance of the health of automobile drivers is only slowly becoming apparent to the courts of the country, according to Dr. Byron Stookey, who suggests in a recent article in *Medical Economics* that more rigid and more frequent physical examinations should be required of all drivers. Good vision is particularly important to a driver, and, as this may readily be impaired in the course of a few years after a license is granted, it is highly important that frequent check-ups be made.

Trapped Sunlight.—Flying over Paris one day, the distinguished French engineer, Pierre Arthuys, was so impressed at the contrast of roofs bathed in sunlight with the darkness of the streets below that it occurred to him that the sun rays wasted on the roofs might be trapped and reflected by means of mirrors into the dark rooms below. From this idea was born the Arthel Heliostat, a useful device, consisting of one mobile and one fixed mirror and two small electric motors controlled by two thermostats. The big mobile mirror, facing skyward, is mounted on a pivot slowly moved by a motor through the arc of a circle, from east to west, thus following the sun in its path. The seasonal movement as well as the daily movement is imparted to the mirror by an ingenious clutch and differential gear, so that every hour on every day of the year, in no matter what latitude, the master mirror is always directly facing the sun and ready to trap on its four square yards of polished glass its full quota of 400,000 lumens.

The heliostat not only saves 35 to 85 per cent in electric light, according to the latitude, but it offers wonderful possibilities for luminous interior decoration effects, and, most important of all, it provides a daily supply of sunlight, one of the most powerful healing agents and germicides known to science.

"Better Sight" Engineer Honored.—Beginning October 1, 1937, following the Convention at White Sulphur Springs, West Virginia, of the Illuminating Engineering Society, Henry B. Dates, Professor of Electrical Engineering at the Case School of Applied Science, Cleveland, will begin his term as president of the Society. Professor Dates has a distinguished record of both academic achievement and practical experience. Perhaps his most signal contribution to lighting was his development of the I. E. S. "Better Sight" Lamp, for which he and his I. E. S. Committee on School Lighting developed the original specifications, as well as the present method of certifying I. E. S. approved lamps. This lamp, hailed as "the first package of Better Light—Better Sight" has practically revolutionized portable lamp design, and has provided a new era of comfort and safety for students and others who depend on portable lamps for sight saving illumination.

Sight Saving in Nebraska.—A survey of social resources in Nebraska, which has been issued in the form of a WPA project, gives considerable attention to the methods of preventing blindness through the agencies of the State Health Department, the State Department of Public Instruction, and the State Department of Labor. Through the control and prevention of infectious diseases, the promotion of education, and the establishment of health clinics and sight-saving classes, an effort is made to minimize the increase of blindness. The report indicates, however, that this is but an outline of the ideal which is aspired to but which is by no means attained.

Glass Bricks and Modern Lights.—An interesting use of glass bricks, which has been hailed by some engineers and architects as offering a more diffused and less glaring light than plate glass, has been made in the Swedish Hospital in Seattle, Wash. They are used to form the walls of the operating suite. From pictures of the result it appears that the room is practically shadowless, about the only contrast being between the relatively low wall brightness and the brightness of the bricks. This indicates that while the transmission factor of the glass is extremely high, its brightness is relatively low, which, from the standpoint of good lighting practice, is an aid to eye comfort.

In Iowa City, the *Press Citizen* has erected its new modern building with glass brick panels providing adequate daylight throughout the exterior, and with a system of indirect lighting in the interior, thus exemplifying the latest trends in lighting for an up-to-date building.

Lighting has been handled effectively throughout this new building for the utmost in efficiency and beauty. The entire lighting system is indirect and represents a total wattage of 55,500. Light which shines from behind light Wedgwood blue, and deep coral panels which run the north and south length of the ceiling, comes from a concealed system. Alcoves on each side of the entrance of the interior are illuminated by modern units lighted indirectly with metal louvers. Lighting in the news room and advertising office has been accomplished by the use of nine 200-watt units in each room. The fixtures, which are for full indirect lighting, are chromium finished and are suspended two feet from the ceiling. Smaller offices are lighted by 750-watt units. The mechanical department is lighted by means of 48 200-watt glass steel diffusers, which eliminate glare, yet give a direct light on make-up tables, linotype machines and other equipment.

Universities Offer Eye Courses.—"The Survey of Eye Conditions" course will be offered this year at the New York University, Washington Square, and Teachers College, Columbia University. These eye courses are open to teachers, social workers, public health nurses and school nurse-teachers, also workers from allied fields. The purpose is to acquaint all groups with the development and preservation of normal vision and the care of the eye in disease, in order to prevent further deterioration of sight. Courses at both universities receive two points of credit each semester. New York University classes are held Fridays, 6:15 to 8:15 P.M. Teachers College classes are held Friday evenings from 7:30 to 9:10.

Both of these courses are sponsored by the State Department of Social Welfare, Bureau of Services to the Blind, Prevention of Blindness.

The Myopia Problem.—A report on myopia by Mr. Bishop Harman at the Ophthalmological Congress held at Oxford early in

July indicates that myopia is largely the result of environment. The chief arguments for such a conclusion are: myopia is more prevalent in girls, who do much fine work, than in boys; the defect occurs most frequently in poorer sections of the community; and further, statistics on the subject reveal no family history of myopia in 67 per cent of the cases of high myopia under consideration. This last argument was countered by Mr. Arnold Sorsby, who claimed that the statistics quoted by Mr. Harman support the view that myopia is a recessive hereditary characteristic.

The arguments in favor of environment as the cause of myopia cast a hopeful ray of light on its possible solution by proper care of the eyes. Evidence from Sweden shows that the introduction of an advanced system of school hygiene has reduced the incidence of myopia in that country.

Retina Prints for Identification.—A method of identification which would provide a valuable supplement to the present use of fingerprints and dentitions has been devised by Dr. Carleton Simon, criminologist of the International Association of Chiefs of Police, who has developed a method of identification by means of the blood-vessel patterns in the retina. In 1935 Dr. Simon described, with Dr. I. Goldstein, a method of classification based on a retinal protractor, with the optic nerve as its center. He uses only the vein pattern, because the arteries, being lighter in color, are not definite enough. The zero axis is a line drawn from the center of the papilla to a point 10 mm. distant on the superior temporal vein, and the notation describes the angles at which veins or branches intersect two circles, one of 10 mm. and the other of 5 mm. radius. His system, which has been gradually simplified in use, needs a minimum of figures and can, he says, be mastered in a couple of hours. This method of identification as an adjunct to fingerprint identification in certain cases sounds promising, and scientists will look forward to further proof of its practical value.

Detroit Hopes to Decrease Night Traffic Accidents.—It has been announced that 3000 new incandescent street lights will replace outmoded arc lamps on several main streets in Detroit. The new units are expected to give about six times as much street illumination as

the old arc lamps, and are being installed as a major part of a $400,000 program for the general improvement of Detroit's street lighting to decrease night traffic accidents.

On 31 miles of streets on which the nighttime visibility was recently increased through modernized lighting, the night-to-day traffic fatality ratio was lowered from 7 to 1 to the present ratio of 1.25 to 1. On seven miles of improved lighting in service for eight months, only one night fatality and one day fatality have occurred —a great improvement over the record of 10 night fatalities and one day fatality on the same seven miles for eight months prior to the installation of improved lighting.

What Price Eyes!—The largest social insurance scheme in China is six months old and has 41,000 members—all ricksha pullers for the Shanghai International Settlement. At a premium of only one cent a shift, the pullers are insured against death or disability, with an indemnity of $40 assured in case of death or $20 for the loss of an eye.

Illinois Society Holds Three-Day Eye Institute.—The second institute on conservation of the eyesight of school children was presented by the Illinois Society for the Prevention of Blindness in a four day session, August 30–September 2. The program included several lectures on methods of protecting vision in school children, as well as a visit on September 1 to the House of Vision, where lectures were given by Hugh Hunter and John Kerry of the Belgard-Spero Optical Co. on the grinding of lenses, and a visit on September 2 to the Orthoptic Clinic at the Illinois Eye and Ear Infirmary, where clinical instruction in diseases of the eye was given. The lecturers included Dr. William Benedict, head of the department of ophthalmology at the Mayo Clinic, Rochester; Dr. Thomas Allen, president of the Chicago Ophthalmological Society, Dr. Philip A. Halper, associate, department of ophthalmology, College of Medicine, University of Illinois; Dr. George P. Guibor, assistant ophthalmologist at Children's Memorial Hospital; Anette M. Phelan, associate in education, National Society for the Prevention of Blindness; Eleanor Hearon, medical social eye worker at Billings Hospital; and Marjora Garrity, educational consultant for the Illinois Society for the Prevention of Blindness.

Basque Refugee Children.—One of the most appealing and significant episodes of the Spanish War has been the flight of 4090 children from Bilbao and the surrounding countryside to England where they are being cared for now. A great deal of interest has been manifested, for obvious reasons, in the physical condition of these children. In response to the inquiry regarding their medical inspection, made by Dr. Andrew MacCallan, who feared that trachoma might be reintroduced into England, there have been several articles printed describing the procedure in detail. Every precaution was taken to avoid importing any infectious disease. The children were examined at the start as well as at the end of the trip. Each child who leaves the camp where he is cared for, for a temporary home in England, will have had a minimum of three full medical examinations. The two cases of trachoma which were found were not permitted to embark, and an ophthalmic surgeon with considerable experience in the diagnosis of trachoma sees all eye cases.

It is surprising to note that the medical officers found that a large majority of the children showed no marked sign of malnutrition, although most of them had for months lived in Bilbao on fish and black bread and had spent the days and many nights herded together in bomb-proof shelters. The public medical service in this particular province of Spain, according to the information obtained from the two English medical officers, is of a very high standard. Many of the children were thin, but the general impression gained, especially before they were stripped, was that they were, on the whole, an alert, intelligent group of children who compared favorably in physique with English children.

World's Fair Health Congress.—In the plans being made for the holding of an International Health Congress during the New York World's Fair in 1939, advantage will be taken of the fact that hundreds of noted medical specialists and public health authorities, representing many countries, will be visiting New York City at that time. American and foreign specialists will be asked to deliver addresses on subjects of interest not only to professional groups, but to the general public as well.

Plans for the 1939 sessions are being perfected by the National

Health Council in collaboration with the World's Fair Advisory Committee on Medicine and Public Health, which is headed by Dr. Louis I. Dublin. The program will be related, as much as possible, to the exhibits on medicine and public health that will be on display at the World's Fair.

It is expected that speakers and exhibits will be concerned more with the problems and methods of preventing ills than with technical aspects of the treatment and cure of disease. Some of the subjects that will be discussed are indicated by the following list of active member agencies in the National Health Council: American Society for the Hard of Hearing, Inc.; American Heart Association; American Public Health Association; American Red Cross; American Social Hygiene Association; American Society for the Control of Cancer; Conference of State and Provincial Health Authorities of North America; Maternity Center Association; National Committee of Health Council Executives; National Committee for Mental Hygiene; National Organization for Public Health Nursing; National Society for the Prevention of Blindness; National Tuberculosis Association.

The United States Children's Bureau and the United States Public Health Service are advisory members of the Council. The American Nurses' Association and the Foundation for Positive Health are associate members.

Visual Educators Convene.—Three significant trends marked the National Conference on Visual Education held in Chicago, June 21–24, 1937: (1) The interest shown by the U. S. Government in the Conference, as indicated by the active participation of three Government departments, which sent both their films and official representatives; (2) the surprising growth of filming by amateur groups; and (3) the recognition, by the Press, of the Conference as an important factor in furthering modern educational programs.

Molded Plastic Reduces Cost of Lenses.—Satisfactory spectacles selling at less than one dollar a pair are now said to be possible through the development in England of "Perspex," a transparent plastic which may be molded into lenses with an accuracy of 1/500,000 of an inch, which is ten times the accuracy required in

spectacles. The tremendous economy in manufacture readily offsets the disadvantage of the shorter life of the plastic lenses, which scratch easily and lose their shape when exposed to high degrees of temperature. The greatly lowered cost would have a great effect in conserving vision by making it possible to supply free glasses to school children and enabling all who require glasses to purchase them.

Sliding Scale for Vision Standards.—A varying standard for vision, according to the demands of the work, is recommended by the *British Journal of Ophthalmology*, in view of the fact that relatively few workers possess perfect vision, although in other respects they may be highly competent. It is obvious that an agricultural laborer does not require so high a standard of vision as a railroad engineer. It is suggested that a sliding scale of standards recorded by Snellen's test types be adopted and that long experience in any particular work may well outweigh a defect in vision. Of course, in cases where the defect is of such a nature as to endanger the safety of the worker as well as of others, it is advisable for him to make a suitable change in his occupation.

Dr. de Lapersonne Dies at 84.—A life marked with distinguished achievements in the advancement of ophthalmology came to an end with the recent passing of Félix de Lapersonne, first president of the International Society for the Prevention of Blindness. His work in organizing and developing the Society was recognized in 1934, when he was awarded the Leslie Dana Gold Medal. He had previously been honored by election to the French Academy of Medicine, of which he became president in 1931. That same year he had conferred upon him the rank of Commander of the Legion of Honor. He will be remembered not only for his brilliance and skill as an ophthalmologist but for his genial personality, which won all who had the privilege of meeting him.

Back Numbers of Sight-Saving Review Needed.—The *Sight-Saving Review*, having exhausted its supply of Volume I, Number 3, Volume VI, Number 2, and Volume V, Number 3, will be glad to receive these issues from subscribers who have no further use for them. A refund of 50 cents will be paid for each copy returned.

National Society Notes.—During the past summer the Society co-operated in the conduct of training courses for sight-saving class teachers and supervisors at Western Reserve University, Cleveland; Wayne University, Detroit; and State Normal School, Buffalo. At Western Reserve, in addition to the usual elementary course, an innovation was made this year by offering an advanced course which was directed by Mrs. Winifred Hathaway, associate director. The total registration at these centers was 98, an increase of 13 over last year, which had been the largest to date. In keeping with its policy of undertaking this work for a limited period, as a demonstration, the Society did not participate with Teachers College, Columbia University, which this year took over the work. The Society, however, co-operated by giving preliminary assistance to the instructor of the course and by providing publications to the twenty students enrolled. Other staff members active in the summer courses were Mr. Lewis H. Carris, managing director; Miss Anette M. Phelan, Ph.D., staff associate in education; and Mrs. Francia Baird Crocker, R.N., associate for nursing activities.

Since June 1, 27 cities in the following states and Canada were visited by staff members attending conventions, rendering consultation service and filling speaking engagements: Kansas, Michigan, Minnesota, New Jersey, New York, Ohio, Pennsylvania, Utah, and Vermont. Suggestive of such field work is the trip by Mr. Carris in connection with the recent organization of the Kansas Society for the Prevention of Blindness. On a planned schedule arranged by the executive secretary of the local agency, who had previously spent some time at the National Society's headquarters consulting the staff regarding organization methods, Mr. Carris presented the subject of sight conservation at meetings or over the radio in the following cities: Independence, Kansas City, Lawrence, Pittsburg, and Wichita. Among other responsibilities placed upon Mr. Carris was his appointment by Mayor LaGuardia as a member of the local sponsoring committee for the annual meeting of the American Public Health Association, and, further, his appointment as a member of the Committee on Conservation of Sight at the World's Fair, to be held in New York City in 1939. Mr. Carris, American correspondent of the International Association for the Prevention of Blindness, will, upon invitation, present

a paper written jointly with Mrs. Eleanor Brown Merrill, associate director, on the subject of "The Rôle of the Social Worker in a Prevention of Blindness Program," and Dr. Park Lewis, vice-president, will discuss "The Responsibility of the Ophthalmologist in the Conservation of Sight and the Prevention of Blindness," before the forthcoming annual meeting of the International Ophthalmological Society, December 8–14, 1937.

Eight universities and teachers colleges were visited by Dr. Phelan, whose lectures reached groups ranging in size from 20 to 500. One of the results is the inclusion of an eye health program in a selected group of the public school system in Delmar, New York. At Cornell University consultation service was given in connection with a project for the vision testing of 1500 incoming freshmen, by means of the Ferree and Rand testing instrument and the routine Snellen chart tests, for the purpose of comparing the results of these two procedures. In response to an urgent request, Dr. Phelan will present, during the 1938 summer session, a course at the University of California, for the preparation of instructors in teacher training colleges.

Mrs. Merrill has been directing her attention to the newly formed Interorganization Committee on Sight Conservation, on which she is the National Society's representative. The Committee comprises representatives from the following organizations: American Public Health Association; American Public Welfare Association; Children's Bureau; Social Security Board; State and Provincial Health Authorities of North America; U. S. Public Health Service; National Society for the Prevention of Blindness; American Academy of Ophthalmology and Oto-laryngology. The purpose of the Interorganization Committee is to demonstrate the possibilities of making state-wide prevention of blindness a part of the program of state health departments.

Under the auspices of the New York Tuberculosis and Health Association, Miss C. Edith Kerby, statistician, gave a radio talk entitled "Insure Your Eyes"; and Mr. Theodore O. Yoder, membership secretary, spoke on "Keeping Well Eyes Well."

Mr. David Resnick, director of publicity, was asked to participate in the session on "Public Health as a Source of News" at an

institute to be held in connection with the annual meeting of the American Public Health Association.

The Society's film, "Preventing Blindness and Saving Sight," was requested for use in 14 states and Canada, and was shown to an estimated audience of 20,000. Exhibit material was supplied in the form of 37 mounted displays and loans from the Society's collection of original exhibit units. Among the fairs served were: Oakland County Department of Health (Michigan); the Indiana State Medical Association; Owsley County (Kentucky); Autryville (North Carolina); and the South Carolina State Fair.

The Society announces with regret the resignation of its associate for nursing activities, Mrs. Francia Baird Crocker, R.N., whose marriage to Mr. Francis J. Carr took place recently. Mrs. Carr's resignation will not be effective until some time after December 1, and it is hoped that she may be prevailed upon to extend her time for special services beyond that date.

Current Articles of Interest

The Spermine Bases of Ocular Tissues, Arlington C. Krause, M.D., *American Journal of Ophthalmology,* May, 1937, published monthly by the Ophthalmic Publishing Company, St. Louis, Mo. A discussion of a quantitative analysis of the spermine and spermidine found in the fresh ocular tissue of an ox. It is illustrated by a chart revealing the proportions of wet and dry spermine and spermidine in bovine conjunctiva, sclera, corneal epithelium and stroma, choroid, iris, vitreous humor, retina, optic nerve, and brain. It is concluded that these substances take a part in some unknown important physiological function of active metabolic tissues.

Effect of Fatigue on the Adjustment of the Eye to Near and Far Vision, C. J. Robertson, M.D., Commander Medical Corps, United States Navy, *Archives of Ophthalmology,* May, 1937, published monthly by American Medical Association, Chicago, Ill. This is a detailed study of tests made with the tachistoscope on pilots ranging in age from 20 to 50 years. The text is copiously supplemented by charts, in which the subjects are studied by age groups of five years. The purpose of the experiments was to establish a standard of speed with safe limitations in five-year age groups of the three phases of adjustment of the eye to near and far vision, with particular reference for use in aviation. The reasons, including age, for the speed of accommodation being outside these limitations are demonstrated. Conclusions reached by the author are as follows:

Age has a marked bearing on the speed of adjustment of the eye to clear seeing at different distances.

With any anomalous conditions of the eye the factor of age becomes of greater importance. After the age of 30 the change becomes rapidly more marked.

Various anomalous conditions of the eye, such as were noted in the discussion of the tests that demonstrated speeds below the limits of safety, are, in part, the cause of the slowing of the speed.

Aviators with speed of adjustment not within the limits of safety should be disqualified physically until such time as adjustment can be made, or permanently if it is found that they cannot make the adjustment.

Fatigue has a marked bearing on the speed of adjustment in all ages, more notably as age progresses.

Fatigue other than that caused by flying can be tested by this method.

The study of fatigue and of the time of recovery is an important phase of this work as yet untouched.

Aniseikonia: A Clinical Study, Guerdan Hardy, M.D., *American Journal of Ophthalmology*, June, 1937, published monthly by the Ophthalmic Publishing Company, St. Louis, Mo. In a clinical study of 34 patients, mostly young adults, with an age range of 17 to 56, the following results were attained:

1. Some patients are benefited by the addition of a size lens to the dioptric correction. The percentage aided, however, has been less than that reported from other clinics.
2. The size differences of a symptomless group of persons wearing corrections for errors of refraction were equal to the size differences of those seeking relief from asthenopia.
3. Not infrequently the dioptric correction is altered at the time the iseikonic lens is prescribed. Obviously, when this occurs, it is not possible to determine, with any assurance, which change is helpful.
4. The muscle balance was not appreciably influenced by the iseikonic lenses.
5. Vertical size determinations were made with greater ease than lateral ones, that is, the patient had less difficulty in making comparisons.
6. The chief objection to the method employed is that it is tedious, tiresome, and difficult for the patient.
7. Sufficient numbers of symptomless individuals should be examined in order to determine, if possible, what a normal size difference would be.
8. Those prescribing iseikonic lenses should avoid incorporating other changes; that is, a change in the strength of the lens should

be made before the size correction is prescribed and not at the same time. Otherwise accurate deductions are impossible.

Chemical Conjunctivitis of the Newborn: Its Cause, Prevention, and Treatment, Lewis Pellman Glover, M.D., *Pennsylvania Medical Journal*, September, 1937, published monthly by the Medical Society of the State of Pennsylvania, Harrisburg, Pa. This study of the effects of silver preparations used to prevent ophthalmia neonatorum reveals that stale preparations often cause severe irritation to infants' eyes. In a few cases both eyes were lost through severe ulceration. The method of treatment consisted of scrubbing the palpebral conjunctiva with boroglyceride on an applicator until it bled. A weak zinc solution was ordered three or four times a day, preceded by boric acid irrigations, and cold compresses were used every three hours. No silver of any type was permitted. The grattage was repeated every four days. This treatment always cured the condition in from one to three weeks, as noted by the return of a healthy conjunctiva and no discharge.

Light Adaptation at the Macula, Edmund B. Spaeth, M.D., *Archives of Ophthalmology*, August, 1937, published monthly by the American Medical Association, Chicago, Ill. This article describes the work done in the Wills Hospital for the National Brotherhood of Railway Firemen and Enginemen, as a result of the claim of firemen before the Interstate Commerce Commission that the effects on their eyes of the illumination from the firebox made it impossible for them to see the signals and call them properly.

The laboratory work which had to be done in connection with this problem was: (1) simulation of the illumination of a fire box; (2) adaptation of persons to this illumination; (3) the simulation of a three point signal light with its illumination corrected for various distances, and (4) the determination of the effects of the illumination of the fire box on an observer's reaction time for finding and for calling the simulated three point position signal light.

The findings of the tests show the effects which varying degrees of illumination have on the macular region and indicate that increasing the illumination does not increase the efficiency of dis-

crimination proportionately. The work was undertaken simply as an application of laboratory methods in an attempt to solve a serious industrial problem which can have a far-reaching effect both in safeguarding the lives of railroad passengers and in making necessary or unnecessary the expenditure of huge sums of money by the railroads for equipment not considered by some a definite necessity.

Book Reviews

HEALTHFUL LIVING. Harold S. Diehl, M.D., New York: Whittlesey House, 1935. 354 p.

In this book on health, unique in that it is interesting, the author discusses with frankness the fundamentals of healthful living. The chapter on vision is informative and the well-selected facts are clearly and simply presented.

The excellent section on farsightedness might have been extended profitably to include data indicating the incidence of true farsightedness in the age periods of adolescence and early maturity. The discussion of squint, likewise, might have been strengthened by a consideration of the significance to depth perception of squint in early childhood.

The brief section on illumination, unfortunately, omits mention of glare, a problem of equal importance with intensity to visual efficiency.

ANETTE M. PHELAN, PH.D.

Briefer Comment

THE NATIONAL HEALTH COUNCIL, INCORPORATED: STATEMENT OF MEMBERSHIP AND ACTIVITIES, 1937–1938. 36 p.

Comprising a summary of the organization, objectives, services, and future plans of its member organizations, the booklet presents concise comment on the achievements and aspirations of these various health agencies.

A HEALTH EDUCATION WORKBOOK. Kathleen Wilkinson Wootten. New York: A. S. Barnes & Company, 1936. 280 p.

This attractive, paper-bound book, designed for teachers, parents, nurses, and social workers, presents an excellent outline for the study of health education. Particularly notable features are the exhaustive bibliographies at the end of each chapter, the clean-cut details of the charts, and the comprehensive new type test summarizing the salient points covered in the text.

EDUCATION IN THE KINDERGARTEN. New York: American Book Company, 1936. 368 p. Ill.

A thorough discussion of the problems peculiar to the teacher of kindergarten children is here presented in a readable and well-illustrated form. Attention is called to the lighting of the kindergarten, with suggestions that the window area be at least one-fifth of the floor area and that the walls be painted a soft shade of tan or green to provide a pleasing light. The testing of vision by means of the "E" chart is recommended, and the detection of traits peculiar to children with defective vision by the use of a behavior test compiled by Dr. Anette M. Phelan, of the National Society for the Prevention of Blindness, is suggested.

TEACHING HIGH-SCHOOL STUDENTS TO READ. Stella S. Center and Gladys L. Persons. New York: D. Appleton-Century Co., Inc., 1937. 168 p. Ill.

A detailed study of the progress of high-school students of inferior reading ability is presented, with numerous charts and illustrations. An analysis of the causes for poor reading shows that low native ability, the use of a foreign language at home, and personality disturbances are more predominant than actual defects in vision. The remedial program includes tests made with the ophthalm-o-graph, a camera which photographs movements of the eye in reading, and the use of the metron-o-scope, an instrument designed to train the eye muscles to react rhythmically.

SOCIAL WORK YEAR BOOK, 1937. Russell H. Kurtz, Editor. New York: Russell Sage Foundation, 1937. 710 p.

This third edition of the *Social Work Year Book* is thirty pages larger and includes a 540-page encyclopedia of topical articles ranging from "Accidents" to "Zoning." In addition, it includes a directory of agencies, listing pertinent facts about their work. In a book so excellently edited, it is regrettable that "Prevention of Blindness" is listed under the general heading "The Blind," since joining them in this way adds further to the confusion as to the distinct entity of each of these phases of social welfare work.

HEALTHY GROWTH. Martha Crumpton Hardy, Ph.D., and Carolyn H. Hoefer, M.A. Chicago: University of Chicago Press, 1936. 360 p.

This is a report of a detailed investigation, over a twelve-year period, of 400 school children, comparing the development of those receiving health instruction with that of an uninstructed group. Phases of development discussed include physical and mental growth, school progress, and behavior adjustment. Numerous charts elucidate the text.

AN INTRODUCTION TO PUBLIC HEALTH. Harry S. Mustard, M.D., New York: Macmillan Co., 1936. 250 p.

While this volume does not present new factual material, it is valuable in that it combines in one book a great deal of material which was previously available only through many scattered sources. It is especially good in its discussions of the work of the U. S. Public Health Service, including a survey of the significance of vital statistics. Special emphasis is laid upon the preventive aspects of disease and upon the detection and correction of physical defects in school children.

SQUINT TRAINING. M. A. Pugh, M.R.C.S., L.R.C.P. London: Humphrey Milford, 1936. 118 p. Ill.

This clearly organized and well illustrated book presents an up-to-date discussion of the newly modified apparatus and new technique in developing binocular vision and correcting a deviating eye. The academic side of strabismus is not dealt with, as the book aims only at giving a practical classification of cases, an accurate method of measuring the deformity, and the technique of treating squint.

Books Received

OCCUPATIONAL LIFE: A WORK GUIDE FOR STUDENTS. Verl A. Teeter. New York: McGraw-Hill Book Company, Inc., 1937. 140 p.

EDUCATION OF THE BLIND: A SURVEY. London: Edward Arnold & Co., Ltd., 1936. 344 p.

YOUTH-SERVING ORGANIZATIONS. M. M. Chambers. Washington, D. C.: American Council on Education, 1937. 328 p.

MANUAL OF THE DISEASES OF THE EYE. Charles H. May, M.D. Baltimore: William Wood and Co., 1937. 500 p. Ill.

Current Publications on Sight Conservation

Note.—The National Society for the Prevention of Blindness presents the most recent additions to its stock of publications. Except for the more expensive ones, single copies are sent free upon request. Unless otherwise specified, they are reprinted from *The Sight-Saving Review.* New publications will be announced quarterly.

245. Proceedings. 136 p. $1.00. Proceedings of the Annual Conference of the National Society for the Prevention of Blindness, December, 1936.

246. Saving Eyesight in Industry. 40 p. 25 cts. Proceedings of the Industrial Session, the Annual Conference of the National Society for the Prevention of Blindness, December, 1936. A reprinted section of Publication 245.

247. Eye Conditions Prevalent in School Age, Joseph E. Golding, M.D. 12 p. 10 cts. The factors causing defective vision in children of school age may be listed as heredity; prenatal disease; defects in the shape of the eyeball; focal infections; childhood diseases; and accidents, according to the author, who discusses these subjects in this article.

248. Motor Vision in Safe Driving, Alvhh R. Lauer, Ph.D. 8 p. 5 cts. The author lists the following eye defects as contributing to motor accidents: reduced field of vision, ocular dominance, blinding from glare of headlights, poor distance judgment, scotomata, and general inattention in driving as brought on by eyestrain.

249. Suggested Regulations for Lighting Sight-Saving Classrooms. 8 p. 5 cts. This article was prepared by a committee called by the Ohio State Department of Education to ascertain the quality and quantity of lighting for comfortable, efficient, and economical classroom use by pupils in sight-saving classes. The committee consisted of sight-saving class specialists, oculists, lighting experts, and school directors.

250. The Social Service Aspects of Refraction, Jeanne Wertheimer. 8 p. 5 cts. The methods of procedure in getting glasses for patients who need them and for getting patients who need glasses to wear them are described by the head social worker of a large ophthalmological institute.

251. The Ear, Nose, and Throat in Relation to Blindness, J. H. Sulzman, M.D. 4 p. 5 cts. Dr. Sulzman points out in this article how ear, nose, and throat specialists do their part in preventing blindness by treating the various focal infections which can, if allowed to progress, affect the health of the eye.

D101. The Right of Sight, Gabriel Farrell, M.D. Reprinted from *Hygeia,* July, 1937. 4 p. 5 cts. A popular presentation of some causes of blindness and how they may be checked.

D102. Contact Glasses, James E. Lebensohn, M.D. Reprinted from *Hygeia*, August, 1937. 2 p. 5 cts. Dr. Lebensohn presents a comprehensive description of contact, or sometimes called invisible, glasses and tells in what cases they may be used to correct visual defects.

D104. Syphilis in Relation to the Prevention of Blindness, Conrad Berens, M.D., and Jacob A. Goldberg, Ph.D. Reprinted from the *Journal of the American Medical Association*, September, 1937. 16 p. 10 cts. This article, read before the Section on Ophthalmology at the 88th Annual Session of the American Medical Association, describes a study of 100,000 case records from five important eye institutions in New York City.

D105. Your Eyes and Your Patient's Eyes, Francia Baird Crocker, R.N. Reprinted from the *American Journal of Nursing*, August, 1937. 4 p. 5 cts. The author points out the responsibility of the graduate nurse of knowing the relationship of general health and eye health and of using her knowledge in increasing the comfort and welfare of her patients.

D106. A School Program for Eye Health, Francia Baird Crocker, R.N. Reprinted from *Public Health Nursing*, January through June, 1937. 20 p. 10 cts. A primer for school nurses and teachers who are charged with the responsibility of vision testing of school children.

D107. Daylighting the Schoolroom, Anette M. Phelan, Ph.D. Reprinted from *Childhood Education*, September, 1937. 8 p. 5 cts. Some points on getting the best daylight in the classroom, including the arrangement of desks, use of shades, and elimination of glare.

D108. Wider Horizons for the Preschool Child, Francia Baird Crocker, R.N. Reprinted from *Public Health Nursing*, September, 1937. 2 p. 5 cts. The author presents facts to substantiate the advisability of examining the eyes of preschool children.

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